

Soft tissue augmentation using free gingival autograft : A case report

KC S¹, Pradhan S²

¹Resident, ²Professor, Periodontics Unit, Department of Dental Surgery,

^{1,2}National Academy of Medical Sciences, Bir Hospital, Kathmandu, Nepal.

ABSTRACT

Gingival recession is defined as “Displacement of soft tissue margin apical to the cemento-enamel junction” (glossary of periodontal terms). The presence of an adequate zone of gingiva is considered critical for the maintenance of gingival health and for the prevention of progressive loss of connective tissue attachment. According to Miller, free gingival graft (FGG) procedure is most predictable method to increase the apico-coronal dimension of the keratinized mucosa and produces patient satisfaction. The procedure has been proven reliable in increasing width of attached gingiva and stopping the progressive recession. A case report in which free gingival autograft has been performed is included. The aim of this case report was to evaluate the changes in the amount of keratinized tissue and in the position of gingival margin in sites treated with free gingival autograft. The goal of therapy in this patient was functional restoration of the periodontal attachment apparatus rather than esthetics.

Keywords : free gingival autograft, gingival recession, inadequate width of attached gingival, mucogingival therapy

INTRODUCTION

Gingival recession is the most common mucogingival deformity and it is characterized by the displacement of the gingival margin apically from the cemento-enamel junction (CEJ).¹ The exposed root surfaces may further lead to hypersensitivity and increase the predilection for developing root caries. Therapeutic modalities are aimed at correction of both the esthetic and functional components of gingival recession.² Gingival recession can be localized or generalized and can be associated with one or more tooth surfaces. 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.³ Sullivan and Atkins published the first classification of gingival recession according to its amenability of being covered using mucogingival surgical

procedures. The four categories to describe defects were: deep wide, shallow wide, deep narrow and shallow narrow.⁴ Miller presented an expanded classification, which is probably the most widely used today. Miller's classification system is as follows:⁵⁻⁴

Class I: marginal tissue recession not extending to the mucogingival junction. No loss of interdental bone or soft tissue. Complete root coverage can be anticipated.

Class II: marginal recession extending to or beyond the mucogingival junction. No loss of interdental bone or soft tissue. Complete root coverage can be anticipated.

Class III: marginal tissue recession extends to or beyond the mucogingival junction. Loss of bone or soft tissue, apical to the cemento-enamel junction but coronal to the level of the recession defect. Partial root coverage can be anticipated.

Correspondence: **Dr. Sushil KC**; e-mail: dr.sushilkc@gmail.com

Class IV: marginal tissue recession extends to or beyond the mucogingival junction.

Loss of bone or soft tissue apical to the level of the recession defect. No root coverage can be anticipated.

The role played by the attached gingiva in the maintenance of gingival health is somewhat controversial. Most of the research performed to clarify the role of attached gingiva has shown that there is no absolute amount of attached gingiva required for gingival health to exist. Miyasato et al.⁶ have demonstrated that, with proper oral hygiene and absence of bacterial plaque, gingival health – in the form of no attachment loss and absence of inflammation – can exist in areas where minimal or no attached gingiva is present. Lang & Loe⁷ on the other hand, suggested that a minimum width of 2 mm of gingiva needs to be present for gingival health to exist. According to that report, areas with 1 mm or less of attached gingiva often presented with clinical signs of inflammation.

The importance of attached gingiva has also been acknowledged by Goldman and Cohen in 1979 who gave a “tissue barrier” concept and postulated that a dense collagenous band of connective tissue retards and obstructs the spread of inflammation better than does the loose fiber arrangement of the alveolar mucosa. They recommended increasing the zone of keratinized attached tissue to achieve an adequate tissue barrier (thick tissue), thus limiting recession as a result of inflammation.⁷

A thick keratinized attached gingiva is capable to withstand the stresses of mastication, tooth brushing, trauma from foreign objects, tooth preparation associated with a crown and bridge, subgingival restorations, orthodontics, inflammation and frenum pull, as well as prevent the apical spread of plaque-associated gingival lesions.⁸ This can be achieved by mucogingival surgical techniques which are designed to provide a functionally and esthetically adequate zone of keratinized attached gingiva.

First described by Bjorn (1963) free gingival grafts have been widely used in the treatment

of certain mucogingival problems like lack of attached gingiva and gingival recession.⁹ By using this technique, attached gingiva can be increased in a very predictable way. Furthermore, the results obtained using this procedure has been reported to be stable.¹²⁻⁹

Although gingival grafting is a procedure with few clinical complications, excessive hemorrhage of the donor site, failure in the graft union, delay in healing and esthetic alterations due to disparity in the color of the palatal gingiva with respects to the grafted area, have been described.

This study was aimed to gain in attached gingiva with autogenous free gingival graft.

CASE REPORT

A 36 years old male patient visited the department of Periodontics, Bir hospital with a chief complaint of sensitivity of a tooth in lower front region and bleeding from gums while brushing. Patient’s medical and dental histories were non-contributory. Intraorally periodontal examination revealed no probing depth of more than 3mm in any location. There was minimal bleeding on probing. The patient’s oral hygiene status was judged to be fair. There was no other periodontal concern other than Miller’s class III recession of tooth 41. Radiographic examination showed interdental bone loss (Fig.1) After phase I therapy, patient was recalled 3 weeks later for re-evaluation. In follow up, the lower incisor showed apico-coronary 3mm of recession, mesio-distally 2mm of recession. Accordingly after the patient’s consent, it was decided to treat the site by Miller’s technique for free autogenous gingival grafting to achieve increase in the attached gingiva with simultaneous increase in vestibular depth in order to improve the effectiveness of the oral hygiene procedures.

Surgical Procedure

Preparation of Recipient Bed: The horizontal incision was made allipap latnedretni eht ni extending from the line angle of adjacent teeth on either side of the recession, creating a well defined butt joint margin.

Case Report

A vertical incision was made along the gingival margin to the alveolar crest. A partial thickness flap was elevated and excised apically maintaining intact periosteum (Fig.2).

Preparation of Donor Tissue: The amount of donor tissue needed was accurately determined by using a nitinol template, by adapting it to the recipient site. The left side of palate was chosen by measuring the thickness of the tissue using a file with a stopper. The area between first and second premolar region which had greater thickness was selected to harvest the donor tissue. The initial incision was outlined by the placement of tin foil template with a no 15 scalpel blade. A bevel access incision was made to get an even thickness of the graft. The incision was made along the occlusal aspect of the palate with no 15 scalpel blade held parallel to the tissue, continued apically, lifting and separating the graft (Fig.6). Tissue pliers were used to retract the graft distally as it is being separated apically and dissected, until the graft is totally freed. The graft obtained was inspected for any glandular or fatty tissue remnants. The thickness of the graft was also checked to ensure the smooth and uniform thickness of 1.5 mm (Fig.4).

The graft was placed on the recipient bed and sutured by means of interrupted sutures (4-0 polyglycolic acid sutures) at the coronal and apical borders (Fig.5). A vertical stretching suture was given for close adaptation of the graft to the tooth surface.

After suturing a periodontal pack was placed to protect the surgical site with tin foil in between pack and the graft for absolute immobilization of the graft. The palatal wound was protected by a pack and pack stabilized by Hawley's retainer.

Post Operative Instructions: The patient was advised to refrain from tooth brushing at the surgical site for two weeks, and prescribed 0.2% chlorhexidine mouth rinsing twice daily for 3 weeks and a course of antibiotics, amoxicillin 500mg thrice daily and 400mg of ibuprofen thrice daily for 5 days. The pack was removed 2

weeks post operatively. The graft was accepted by the recipient bed with neovascularization and good healing in progress.

Surgical site was irrigated with normal saline and suture was removed. The healing of palatal wound was satisfactory; patient did not complain of any discomfort. The patient was instructed to use a soft tooth brush with a Charter's technique followed by a 60-second rinse with chlorhexidine digluconate for the next one week. At the end of 6 weeks of healing period, the patient can return to the usual oral hygiene technique (Fig.6)



Fig.1 Pre-Operative photograph and radiograph



Fig.2 Preparation of recipient bed



Fig.3 Preparation of the donor site



Fig.4 Graft



Fig.5 Suturing and periodontal dressing



Fig.6 After six weeks



Fig.7 After three months

DISCUSSION

Predictability of success of soft tissue grafting is dependent on several factors such as anatomical factors, surgical skill of the operator, and postoperative maintenance of the patients. Miller (1987)¹³ has proposed many factors for incomplete or failure of root coverage or increasing width of attached gingiva. These include improper classification of marginal tissue recession, inadequate root planning, failure to treat the planed root with citric acid, improper preparation of recipient site, inadequate size of interdental papillae, improperly prepared donor tissue, inadequate graft size, in adequate graft thickness, dehydration of graft, inadequate adaptation of graft to root and remaining periosteal bed, failure to stabilize the graft, excess or prolonged pressure in captions of sutured graft, reduction

of inflammation prior to grafting, trauma to graft during initial healing.

A free gingival graft has been used for increasing the width of the keratinized and attached gingiva, but complete root coverage is not achieved and this is often a limitation of this procedure.⁴ It is a procedure of high degree of predictability when used alone or combined with other technique. However it is more technically demanding, time consuming, and the color match of the tissue is often less than ideal. Its indication includes: increasing the depth of vestibule, increasing the amount of attached gingival associated with restoration, augment the area of minimal gingival prior to orthodontic treatment. The lack of good adaptation between graft and the recipient site, and the loss of interdental bone, that is characteristic of class III recessions, resist any attempts of success. In the present case, the tooth presenting with marginal tissue recession was also lacking the attached gingiva. Therefore, in this case we decided to use a free gingival graft to increase the width of the attached gingival and .htped ralubitsev At the end of six months following ehtprocedure,

avignig dehcata fo htdiw ni esaerani was achieved with a laitrapredution in recession height. Selection of the palatal donor site should avoid the rugae areas as they may persist in the grafted tissue for as long as 9 years and consequently compromise aesthetics.^{4,16} Interestingly, an exostosis can occur beneath the periosteum after free gingival graft procedure. It is thought that surgical trauma may stimulate the bony exostosis response.¹⁸⁻¹⁷

CONCLUSION

Free gingival graft may still be the best feasible and effective treatment procedure of choice in mucogingival surgery for gingival recession, when an increase in the apicocoronal amount of the keratinized gingival tissues is a desirable treatment outcome such as in cases with shallow vestibular depth and with inadequate gingival tissue.

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