FREE GINGIVAL GRAFT FOR GINGIVAL AUGMENTATION - A CASE REPORT

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Abstract

The treatment of mucogingival problems is one of the most challenging aspects of periodontal therapy. The insufficient or absence of attached gingiva increases the risk of the development and progression of gingival recessions. A patient with Miller's class II gingival recession and shallow vestibular depth in the mandibular anterior region was selected for the treatment. Autogenous free gingival grafts harvested from the palatal mucosa was used to gain the width of the attached gingiva. After 2 weeks the healing was uneventful. The gingival augmentation technique using free gingival autograft led to a significant gain in the width of the attached gingiva in the treated regions. Free gingival autograft for gingival augmentation is a promising and highly predictable technique resulting in a significant gain in the width of the attached gingiva.

***Key words**: Gingival recession, Free gingival graft, Guided tissue regeneration*

INTRODUCTION

Globally, around 50% of individuals have gingival recession. For management of recession, several surgical techniques are applied: free gingival graft (FGG), sub-epithelial connective tissue graft, laterally-positioned graft, double-papilla flap, pouch and tunnel technique and guided tissue regeneration[1,2]. FGG, first described by Bjorn et al. (1963), to increase width of attached gingiva and deepening of sulcus.[3] Mean root coverage percentage ranges from 43%-85.3%. However, meticulous surgical procedure can ensure success rate of FGG towards higher side.

CLINICAL REPORT

A 28-year-old male patient reported to the Department of Periodontology, Educare institute of dental sciences, Chattiparamba, Malappuram with a chief complaint of downward shifting of gums in lower front teeth region which was progressive in nature and causing tooth sensitivity. Medical history was non contributary.

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Figure 1: Pre-surgical view

On clinical examination, there was gingival inflammation associated with the region. The oral hygiene status was fair with moderate deposition of plaque and calculus. There was presence of gingival recession (Miller's Class II)[4] with respect to #31 and #41. A thin gingival biotype and high lower lip line was noticed. Frenal pull was also associated with the recession. During first visit, full mouth scaling and root planing was done. Modified Stillman's method of tooth brushing was demonstrated and brushing technique modification was advocated.

Since attached gingiva was minimal, root coverage cannot be attempted in a single visit. The patient was provided with the detailed description of the same. On the next visit after one month, written

consent was taken and the surgical procedure was carried out as follows:

Preparation of recipient bed: The area was anaesthetized by use of local infiltration technique with 2% Lignocaine HCl + 1:2,00,0000 epinephrine. The peripheral gingival tissues surrounding the recession was de-epithelialized after scaling and root planing was performed.

Figure 2: Recipient bed preparation.

Obtaining the graft from donor site: The graft was planned to be harvested from distal to anterior palatine rugae area with respect to tooth number 24, 25, and 26 .

Figure 3 : Obtaining the graft from donor site

Greater palatine nerve block was given using same anaesthetic solution as used for the recipient site. Tin foil template of 15×7 mm was placed on the donor site and bleeding points were induced. Partial thickness dissection was done to harvest the FGG from the donor area. Thus, a graft was obtained from the palate. The donor site was covered with haemostatic sponge for haemostasis and Hawley's retainer was placed.

Graft preparation: The underside of graft was inspected for the presence of any residual adipose or glandular tissues and were trimmed to set uniform thickness of about 1.5 mm using #15 scalpel.

Figure 4: Harvested FGG from palate

Suture removal and post-operative healing: Non-eugenol periodontal dressing and sutures were removed after 14 days followed by irrigation with normal saline. The recipient site and donor site healing was satisfactory. At the one month follow-up, both recipient site and donor site were completely healed & desired results were obtained.

Figure 5: Graft completely sutured to recipient bed

Post-surgical instructions: The patient was instructed to refrain from tooth brushing at the surgical site for 10 days. Chlorhexidine mouthwash 0.2% 10ml twice daily for 10 days along with Amoxicillin 500 mg thrice daily + Metronidazole 400mg thrice daily for 5 days and analgesics as per needed was prescribed. Patient follow up visit was scheduled after 10 days of surgery.

Figure 6: Post-operative view at 2 weeks

DISCUSSION

Gingival recession is displacement of gingival margin apical to cemento-enamel junction leading to exposure of root surface and posing various problems like dentinal hypersensitivity, root caries and aesthetic compromise. Common etiologies for most of the recession are increasing age, masochistic habits, injudicious orthodontic forces, periodontal surgery, periodontal diseases and abnormal frenal attachments. For management of gingival recession, several surgical techniques are being clinically applied like FGG, sub-epithelial connective tissue graft, laterally positioned graft, double papilla flap, pouch and tunnel technique and guided tissue regeneration[2].

Due to its wide variety of use, FGG is the commonly practiced technique for many decades. It was used basically for management of inadequate width of attached gingiva and inadequate vestibular depth. The advantage with this technique is that it offers root coverage and gingival augmentation. Technique sensitivity, high patient compliance, trauma during healing, open raw wound at donor site and unpredictable colour match are the major drawbacks of FGG. There are different schools of thoughts for thickness of graft. Soehren and colleagues in 1973 advocated the use of partial to intermediate thickness graft of 0.5-0.75 mm as the ideal graft for FGG believing there is less primary contraction due to less amount of elastic fibers in thin graft[5]. However, results observed by Ratertschak, Siebert and Ward revealed the secondary contraction of thin grafts due to cicatrisation during uptake of graft by tissues. Thus, the ideal full thickness graft as described by Sullivan and Atkins back in 1968 still holds true for successful healing and ideal results[6]. This case report depicts the successful use of FGG as described by Miller's criteria for successful root coverage. The soft tissue margin was at the cementoenamel junction, with clinical attachment to the root, the sulcus depth two mm or less and no bleeding on probing was observed. Also, the thick biotype keratinised gingiva was the end result after first month of surgery[7].

Healing after graft placement

On day 1 post-graft placement, host tissues will exhibit a deep red colour, indicating the vascular phase of the inflammatory reaction, with hyperemia and slight stagnation of blood flow into and out of the surgical site. The lateral margins of the graft tissue is sealed by a fibrin mesh to its adjacent soft tissues, which is persistent in the following stages of healing. Evidence from the previous studies reveal that the graft being separated from the recipient area by this layer of fibrin and for the post operative two days initially the viability of the graft is maintained by

plasmatic circulation8.During this period, all epithelial strata (except the stratum basale) become necrotic, exhibit an opaque cream color, and begin to desquamate.

During days 3 through 6 post surgery, there will be little change in clinical appearance; adjacent reddish areas indicative of vascular proliferation, minor degree of edema with a surface layer of desquamating epithelium. On comparing the images over days one to six, various degrees of epithelial desquamation can be noticed which is depicted as reduction in epithelial opacity gradually. The inflammatory condition and response of adjacent soft tissues progressively decreases. At day 3, the oral mucosa at the inferior border will be slightly inverted and not sealed to the graft tissue, which is typical of healing by secondary intention. Also, on days 3 through 6, any graft tissue overlying enamel may exhibit a yellow-cream color and appear necrotic[8].

At days 7 through 9 post surgery, the margins of the graft are merging with adjacent recipient tissues, except for the inferior border, which will still be healing by secondary intention. At days 7 and 8, the graft color will be a mixture of erythematous and white opaque areas. The opaque surface will mostly disappear by day 9 , indicating an intact layer of regenerated epithelium.

By day 8, the graft is clearly flattened, edema will have subsided and, except for the inferior border, the graft and host tissues will be contiguous. During days 10 through 13, inflammation will continue to decrease. However, islands of persistent of the graft that was taken. Every individual's healing pattern is different, and the same is true for the pain threshold[9,10]

However, one suggested approach is to fabricate a plastic vacuum form of your upper arch. This is a clear, thin plastic that snaps press-fit onto your teeth and is trimmed to make sure that the palate is covered in its entirety. Thus, it will provide pressure to the donor site after the surgery and avoid irritation from food and the tongue. If a series of grafting surgeries is expected, this is a good optionand would certainly have a positive effect[9,10].Infection - Similar to any type of surgical procedure, infection will delay wound healing. This is especially true for oral wounds that are exposed

inflammation involving the marginal gingivae may continue up to day 21. By day 13, graft and host tissues at the inferior border will be fused. In this case, the inflamed and hyperplastic interdental papilla between teeth #24 and 25 was removed via gingivoplasty. During day 21, the complete regeneration of the keratinized epithelium is seen as a reddish- pink to white pink color transition. Inadequate oral hygiene and improper maintenance can lead to gingival inflammation[8].

Complications after graft placement

Swelling/suture loosening - The graft tissue survival (obtained from the palate generally) exclusively depends on the microcirculatory components from the adjoining bone (as there are no blood vessels on tooth surfaces). The grafted tissue stability is of prime concern in angiogenesis.

While healing, at times swelling or inappropriate suturing(suture loosening etc) may cause mobility of the graft segment leading to the failure of the surgery. Though not much often, in these scenarios, it would be advisable to wait till healing and maturation of it's adjacent tissues and perform again. But it needs to be noted that surgical site quality, exposure and surrounding hard and soft tissue support vary from case to case and these invariably can determine the outcome of the surgical procedure[9,10].

Tissue sloughing from upper arch - A relatively not infrequent, "normal" complication occurs where the tissue sloughs. It has to do with the size to continuous bacterial challenge.

A prescription for antibacterial/ antiseptic mouth rinses is generally given to control bacterial load for the first 10 days of ealing[9].Uneven healing - Following complete wound healing, if there is an obvious problem with symmetry, it may be necessary to go back and do what is called "gingivoplasty". This is a simple procedure performed to thin the extra soft tissue[10].

CONCLUSION

So in this case gingival augmentation apical to CEJ was attempted and approximately 4mm of width of attached gingiva was achieved at 6 months. Further second stage surgery was planned for the root coverage procedure.

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Conflict of Interest: *None Decl*ared