

Free Gingival Autograft – A Case Report with 3 years follow-up.

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Abstract: The need for keratinised tissue around a tooth has been established by numerous longitudinal clinical studies. Increasing the width of keratinised mucosa may benefit the periodontal tissue health, including reduced plaque accumulation and mucosal inflammation.

The free gingival autograft (FGG) is one of the most common and predictable method for correction of mucogingival defects. Although there are a few drawbacks associated with the procedure, it is still the first line of treatment for gingival augmentation. In this case report, the FGG technique was performed to increase the keratinised tissue and correct the shallow vestibular depth. The patient was followed up for 3 years after the surgical procedure to determine the long term changes that occur in the graft tissue.

Key words –Autograft, Gingival graft, Mucogingival therapy, Root Coverage, Soft tissue grafts

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I. Introduction

An intact mucogingival complex along with adequate width of attached gingiva is considered as an important criteria in periodontal maintenance.^[1] The keratinised tissue is a dense, resilient tissue, tightly attached to the cementum and bone. It acts as a protective barrier to physical trauma due to tooth brushing or aberrant frenal or muscle attachments. It also aids in plaque control around teeth subjected to restoration or orthodontic tooth movement.^[2] In contrast, the alveolar mucosa is non-keratinised and a loosely attached tissue, that is mobile upon clinical manipulation. It is less capable of withstanding the functional stresses of mastication and oral hygiene procedures. An inadequate width of attached gingiva often results in more inflammation and less resistance to functional rigors of oral hygiene and mastication, and subsequently results in attachment loss.^[2]

The free gingival autograft (FGG) is a well-established, pure mucogingival procedure that has been used extensively to treat defects of inadequate attached gingival dimensions. It is one of the most common and predictable method for augmenting gingival tissue dimension and is considered as a gold standard.^[3] Moreover, it has also been suggested to treat gingival recession, particularly if the recession is shallow and narrow, due to maximum availability of collateral vascular supply.

Partial or complete root surface coverage on single or multiple adjacent gingival defects can be expected by the use of FGG. To the authors' knowledge, very few cases of FGG with a long term follow up are available in published literature. In this case report, the FGG, harvested from the hard palate, was used to increase the keratinized tissue and then followed up for a period of 3 years to determine the results.

II. Case Report

A twenty two year old male patient reported with a chief complaint of bleeding gums and mild sensitivity in the lower anterior region since 4 months. The patient's medical and dental histories were non-contributory and oral hygiene status was judged to be fair. On intraoral examination, Miller's class I and II gingival recessions was seen with tooth #41 and 31 respectively. Absence of probing pocket depth and radiographic evidence of bone loss was noted.

Presurgical therapy included scaling, root planing and plaque control instructions. 3 weeks after phase I therapy, tooth #41 showed 2mm of gingival recession whereas, tooth #31 showed 4mm of gingival recession (Fig. 1). It was decided to treat the soft tissue defect using a FGG.



Fig. 1 – Pre-operative frontal view. Miller’s Class I recession with tooth #41, Miller’s Class II recession with tooth #31.



Fig. 2 – Recipient bed prepared.

Surgical Procedure

After adequate local anaesthesia, a horizontal incision was made at the level of cementoenamel junction from the line angles of the adjacent teeth (Fig 2). This created a butt joint margin around the defect. Vertical incisions were given, at the terminal ends of the horizontal incision, extending into the alveolar mucosa about 3mm beyond the apical extent of the recession. A partial thickness flap was elevated and excised apical to the defect. De-epithelialization of the interdental papillae was done to a level coronal to the cementoenamel junction.

A foil template was used to accurately determine the amount of donor tissue to be harvested. The template was made by adapting it over the surface of the recipient site (Fig 3). The foil template was then transferred to the hard palate (Fig 4), 3mm apical to the gingival margin, between the first premolar and molar, which had a relatively greater thickness. An initial incision was outlined by the tinfoil template using a no. 15 scalpel blade. Incisions were then extended about 2mm deep into the palatal tissue and a bevel access incision was made to get an even thickness of the graft. Using tissue pliers, the graft was retracted distally as it was separated apically and dissected until it was totally freed. The graft of 1.5mm thickness obtained was visualised for any glandular or fatty tissue remains, and the edges were trimmed to form a butt joint (Fig 5).



Fig. 3 – Tin foil template adapted over recipient bed.



Fig. 4 – Tin foil template transferred to the hard palate.



Fig. 5 – Free gingival autograft harvested from the hard palate.



Fig. 6 – Graft adapted over the recipient bed.

The graft was immediately placed on the recipient bed (Fig 6) and sutured using Holbrook and Oschebein suturing technique^[4] with a 4-0 braided black silk suture material (Fig 7). Two sling sutures were given around the tooth to firmly adapt the graft on the recipient bed and prevent the formation of dead space. After suturing, a periodontal pack was placed to protect the surgical site and the palatal wound was protected by a pack stabilized by Hawley's retainer.

Post-operatively, the patient was prescribed a course of antibiotics including amoxicillin 500mg thrice daily and 400mg of ibuprofen thrice daily for 5 days. The patient was asked to refrain from tooth brushing at the surgical site for 2 weeks and use 0.2% chlorhexidine mouth rinse twice daily for 3 weeks. 10 days after the surgical procedure, the periodontal pack and the sutures were removed and the site irrigated with normal saline. The graft did not show any signs of necrosis over the avascular roots (Fig 8). The patient was then re-evaluated at 6 months after the surgery where, although a discrepancy in colour and texture between the healed graft and surrounding tissue was seen, the graft had increased the dimensions of the keratinised gingiva (Fig 9). At a 3 year follow-up, significant gingival recession coverage with tooth #31 and complete gingival recession coverage with tooth #41 was noted (Fig 10).



Fig. 7 – Sutures placed without formation of tissue dead space.



Fig. 8 – 2 weeks follow-up.



Fig. 9 – 6 months follow-up.



Fig. 10 – 3 years follow-up.

III. Discussion

The autogenous FGG technique, introduced in 1963, is still one of the most popular and predictable mucogingival procedure. Its indications include increasing the depth of vestibule, increasing the amount of attached gingiva associated with restoration or oral hygiene performance, augment the area of minimal gingiva prior to orthodontic treatment.^[5] Keratinised tissue increases the resistance of the periodontium, provides stability to the gingival margin, and dissipates forces exerted due to movement of the alveolar mucosa. The term 'Free gingival graft' may be misleading as the graft obtained from the palate is technically masticatory mucosa, and not actually gingiva.^[6] However, this terminology has routinely been used in general practice despite its misnomer.

In this case report, FGG was used to augment the keratinised tissue. Along with increasing the width, gingival recession coverage was also attained subsequently. This could be attributed to the phenomenon of creeping attachment. Creeping attachment results in a post-operative coronal migration of the free gingival margin.^[7] Factors such as narrowness of the recession, presence of adequate interdental bone, absence of severe tooth malpositioning, and adequate plaque control favour creeping attachment.^[8]

Although FGG has gained immense popularity, it has certain disadvantages of requiring an additional donor surgical site, limited availability of donor tissue, secondary intention healing of palatal wound, post-operative pain and unesthetic patch-like appearance. This discrepancy in the colour and texture is due to the retention of viable cellular components by the graft at an ectopic site. Thus, the FGG expresses characteristics of the palatal mucosa at the recipient site.^[9]

In any form of corrective surgery, the therapeutic goal must be clearly defined and comparison between different techniques to achieve the goal must be done. When increasing the zone of keratinised tissue is desired, the clinician should consider performing a FGG, as this procedure shows considerable success in such situations.^[10]

IV. Conclusion

The FGG when used for increasing the amount of attached gingiva is a relatively simple surgical procedure when judiciously performed. The long term success of this case can be credited to the specific indication, appropriate use of the procedure and satisfactory maintenance by the patient.

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