Original Research Paper

Volume - 15 | Issue - 04 | April - 2025 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Periodontics

FREE GINGIVAL GRAFT -A PREDICTABLE TECHNIQUE TO ENHANCE THE ZONE OF ATTACHED GINGIVA AND FOR RECESSION COVERAGE -A CASE REPORT

Dr Dilip Goswami* Professor and Head of Department of Periodontics, Regional Dental College, Guwahati, Assam, India. *Corresponding Author

Dr Pankaj Dewanjee Resident M.D.S, Department of Periodontics, Regional Dental College, Guwahati, Assam, India.

Dr Rahul Kanungo Resident M.D.S, Department of Periodontics, Regional Dental College, Guwahati, Assam, India.

ABSTRACT The present case report is intended to highlight free gingival graft for a predictable recession coverage and to increase the zone of attached gingiva simultaneously. This report presents the outcome of the treatment of a patient with Miller class IV/Cairo RT 3[1-2] gingival recession with inadequate attached gingiva of one mm in the region of lower central incisors along with a shallow vestibule. After completion of Phase I therapy, reevaluation of the patient was done at the end of eight weeks where significant improvement of the signs of inflammation was observed. The standard surgical protocol was observed and the patient was treated with a free gingival graft harvested from the palate. Baseline data and relevant post-operative data at the end of three months and six months were recorded. Results of the present study indicate that FGG is a predictable technique to enhance the zone of attached gingiva along with root coverage and vestibular deepening for better maintenance of oral hygiene.

KEYWORDS : gingival recession, free gingival graft, attached gingiva, recession coverage, shallow vestibule

INTRODUCTION

Gingival recession is a frequently encountered mucogingival problem that results from multiple pathological factors and is characterized by apical migration of the gingiva resulting in progressive exposure of the root surface which causes aesthetic problems and increases the risk of developing hypersensitivity and root caries. Recession may be localized or generalized, associated with one or more tooth surfaces.

Periodontal plastic surgeries are performed to correct various mucogingival deformities. The present case report describes the treatment of a patient presenting with inadequate attached gingiva with recession of the lower central incisors along with a midline diastema. Studies show that the presence of an adequate zone of attached gingiva is critical for the maintenance of gingival health and the prevention of progressive loss of connective tissue attachment. Lang and Loe in their study found that "Two mm of keratinized gingiva is adequate to maintain gingival health" which is widely accepted among clinicians.[3] The importance of attached gingiva has also been clearly described by Goldman and Cohen in the year 1979 who gave a "tissue barrier" concept.[4] They recommended increasing the zone of keratinized attached gingival tissue to achieve an adequate tissue barrier thus limiting recession as a result of inflammation.[3] Various mucogingival surgical techniques are designed to achieve a functionally and aesthetically adequate zone of keratinized attached gingiva.[4]

Bjorn (1963) was among the pioneers to recommend the free gingival graft technique in the treatment of specific mucogingival problems presenting with inadequate attached gingiva and gingival recession.[5-6] Studies show that results achieved using FGG are stable and predictable.[5-8]

CASE REPORT

A 36-year-old female patient attended the Department of Periodontics, Regional Dental College, Guwahati, India, with a chief complaint of exposure of the roots of the lower front teeth region with gum bleeding.

CLINICAL FINDING

The patient was systemically healthy and measured blood pressure was 120/80 mm Hg and the pulse rate was 74/min. The patient gave no history of previous dental treatment and does not have any bad oral habits like tobacco chewing or smoking. The patient also presented with a shallow vestibule and the tension test was found to be positive in relation to 31,41. In the same region, an inadequate zone of attached gingiva of approximately less than one mm was found. The recession defect belongs to the category of Miller Class IV / Cairo's RT 3 [1-2] and 5 mm and 4 mm recession defects were measured with respect to 41 and 31 respectively.

Surgical Protocol

Relevant haematological tests were done before the start of actual treatment. All the haematological parameters including hemoglobin level, bleeding time, clotting time, platelet count, and INR were found to be within normal limits.

Phase-I therapy was completed and the patient was appointed for the surgical therapy after eight weeks. The standard surgical protocol was observed while performing the FGG for root coverage with an aim to cover the specified recession area and also to increase the vestibular depth along with increasing the zone of attached gingiva.

After obtaining adequate local anesthesia, the recipient site was prepared by making an initial incision at the mucogingival junction for vestibular deepening with a No. 15c blade and connecting it with the incision both horizontally and vertically. The exposed root surfaces were thoroughly scaled and planed with the help of gracey curette and saturated citric acid was applied over the root surfaces for five minutes to obtain biomodification of root surfaces for better result.

A surgical stent of the defect area was prepared using sterilized aluminium foil. After obtaining the FGG from the palate irregularities in the underlying tissue of the obtained graft were removed along with irregular edges to make it regular and thin. The FGG was placed at the recipient site and adequate finger pressure was given to eliminate any dead space and for close adaptation of the graft to the underlying recipient area. The graft was secured in place by applying interrupted sutures and a cross suture given with a 5-0 resorbable polyglycolic suture material to closely adapt the graft to the recipient site. A non-eugenol periodontal pack was placed over the surgical area.

POST-SURGICAL CARE

Post-operative instructions were given to the patient and a soft diet was advised for at least two weeks. Antibiotics, analgesics, haemostatics, and 0.2 % chlorhexidine mouthwash were prescribed. The patient was recalled after one week and the periodontal pack was removed. The surgical area was carefully debrided and cleaned by applying antiseptic solution. The patient was again recalled after two weeks, six weeks, three months, and six months. Uneventful healing was observed during the subsequent recall visits and the patient was asked to maintain strict oral hygiene. Relevant data were recorded during the subsequent visits.

RESULTS

At the end of six months of post-surgical evaluation, 1 mm graft shrinkage was observed and 80% root coverage (4 mm) was achieved with respect to 41 and 87.5% root coverage (3.5 mm) with respect to 31 using the root coverage % formula as shown in ***Table 1***.[9] An increase in the amount of attached gingiva (3 mm with respect to 41 and 2.5 mm with respect to 31) was noted at the end of six month post-operative

period as shown on ***Figure 1***. On clinical examination, a healthy gingiva was observed devoid of bleeding on probing.

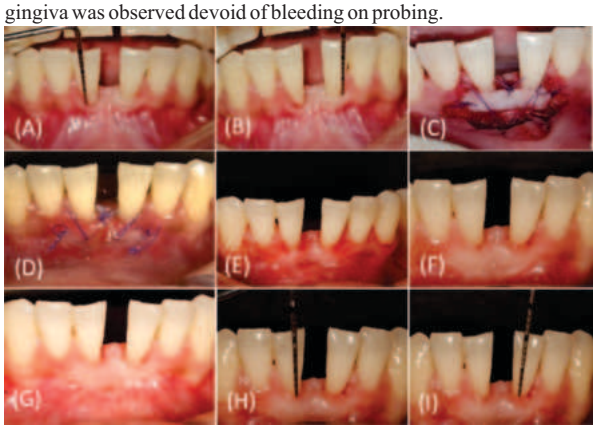

Figure 1- Photographs showing pre-operative, intra-operative and post-operative stages of the surgical procedure. Pre-operative photograph after phase-I therapy (A, B), Recipient site with FGG (C), Two weeks post-operative photograph (D), Six weeks post-operative photograph (E), Three months post-operative photograph (F), Six months post-operative photograph (G,H, I).

Table 1-Percentage Of Root Coverage Was Calculated After 12 Months Using The Following Formula:

$$\frac{(\text{Baseline RD}) - (\text{12-month RD})}{(\text{Baseline RD})} \times 100$$

DISCUSSION

Localized gingival recession is a frequently encountered clinical problem. Various surgical procedures are being advocated for recession defects with varying success rates. However, clinical problems associated with a thin gingival phenotype with inadequate vestibular depth and attached gingiva often pose a challenge to the clinician in adequately addressing such a defect. FGG has been most widely used since 1960 for root coverage and augmentation of keratinized tissues.[10-11] Revascularization of connective tissue graft occurs from the overlying flap as well as from both the periodontal and supraperiosteal plexus from the areas bordering the recession defect.[12-13] The healing of the non-submerged graft depends primarily on the formation of anastomoses between existing vessels in the graft and circulation in the periosteal connective tissue bed via new sinusoidal vessels.[14]The avascular area and thinner graft (less than one mm) owe to mean vertical shrinkage of 42.3% in thin FGGs over twelve months as reported by Mörmann et al.[15] Another potential disadvantage is a secondary wound at the donor site (palate) leading to pain and discomfort during the first-week post-surgery reported by Del Pizzo. [16]

Zucchelli et al [17] reported that recession coverage of mandibular incisors was the most challenging teeth to be treated.

The FGG technique which has been chosen in the present case, achieved more than 80 % root coverage along with favorable phenotype change and increased zone of attached gingiva. Studies show that initial graft shrinkage is a frequent observation with FGG mainly during the first month and remains stable subsequently. [18-20] John Matter (1980), reported that there will be creeping coronal attachment of the gingival tissues that occurs over the months, so complete root coverage is expected in the follow-up period.[21]

CONCLUSION

The FGG technique introduced by Bjorn (1963)[5-6] and later on the first case report published by John M. Nabers (1966)[10], is still a standard predictable technique to cover recession defects and mucogingival deformities with simultaneously achieving the goal of increasing the zone of attached gingiva along with vestibular deepening.

Conflict Of Interest: None

REFERENCES:

1. Cairo, F., Nieri, M., Cincinelli, S., Mervelt, J., & Pagliaro, U. (2011). The interproximal clinical attachment level to classify gingival recessions and predict root coverage outcomes: an explorative and reliability study. *Journal of clinical periodontology*, *38*(7), 661–666. https://doi.org/10.1111/j.1600-051X.2011.01732.x
2. Miller P. D., Jr (1985). A classification of marginal tissue recession. *The International journal of periodontics & restorative dentistry*, *5*(2), 8–13.
3. Lang, N. P., & Löe, H. (1972). The relationship between the width of keratinized gingiva and gingival health. *Journal of periodontology*, *43*(10),623–627. https://doi.org/10.1902/jop.1972.43.10.623
4. Cohen Edward. 3rd ed. BC Deker Inc; Hamilton: 2006. Mucogingival Surgery. Atlas of Cosmetic and Reconstructive Periodontal Surgery. 45.
5. Björn H. Free transplantation of gingiva propria [abstract]. In: Symposium in periodontology in Malmö. Odontologisk Revy 1963;14:321–323.
6. Björn H. Fri transplantation av gingiva propria [abstract]. In: Symposium i parodontologi. Sveriges Tandlaekarefoerbunds Tidning 1963;55:676–684.Popova C, Kotsilkov K, Doseva V. Mucogingival surgery with free gingival graft (strip technique) for augmentation of the attached gingival tissues: Report of three cases. J IMAB Annl Proc (Scientific papers). 2007 Jan 1;2:25-30.
7. Agudio, G., Nieri, M., Rotundo, R., Cortellini, P., & Pini Prato, G. (2008). Free gingival grafts to increase keratinized tissue: a retrospective long-term evaluation (10 to 25 years) of outcomes. *Journal of periodontology*, *79*(4), 587–594. https://doi.org/10.1902/jop.2008.070414
8. Sullivan, H. C., & Atkins, J. H. (1968). Free autogenous gingival grafts. 3. Utilization of grafts in the treatment of gingival recession. *Periodontics*, *6*(4), 152–160.
9. Zucchelli, G., Mele, M., Stefanini, M., Mazzotti, C., Marzadori, M., Montebugnoli, L., & de Sanctis, M. (2010). Patient morbidity and root coverage outcome after subepithelial connective tissue and de-epithelialized grafts: a comparative randomized-controlled clinical trial. *Journal of clinical periodontology*, *37*(8), 728–738. https://doi.org/10.1111/j.1600-051X.2010.01550.x
10. Nabers J. M. (1966). Extension of the vestibular fornix utilizing a gingival graft--case history. *Periodontics*, *4*(2), 77–79.
11. Matter J. (1982). Free gingival grafts for the treatment of gingival recession. A review of some techniques. *Journal of clinical periodontology*, *9*(2), 103–114. https://doi.org/10.1111/j.1600-051x.1982.tb01226.x
12. Guiha, R., el Khodeiry, S., Mota, L., & Caffesse, R. (2001). Histological evaluation of healing and revascularization of the subepithelial connective tissue graft. *Journal of periodontology*, *72*(4), 470–478. https://doi.org/10.1902/jop.2001.72.4.470
13. Janson, W. A., Ruben, M. P., Kramer, G. M., Bloom, A. A., & Turner, H. (1969). Development of the blood supply to split-thickness free ginival autografts. *Journal of periodontology*, *40*(12), 707–716. https://doi.org/10.1902/jop.1969.40.12.707
14. Nobuto, T., Imai, H., & Yamaoka, A. (1988). Microvascularization of the free gingival autograft. *Journal of periodontology*, *59*(10), 639–646. https://doi.org/10.1902/jop.1988.59.10.639
15. Mörmann, W., Schaer, F., & Firestone, A. R. (1981). The relationship between success of free gingival grafts and transplant thickness. Revascularization and shrinkage--a one year clinical study. *Journal of periodontology*, *52*(2), 74–80. https://doi.org/10.1902/jop.1981.52.2.74
16. Del Pizzo M, Modica F, Bethaz N, Priotto P, Romagnoli R. The connective tissue graft: a comparative clinical evaluation of wound healing at the palatal donor site. A preliminary study. J Clin Periodontol. 2002;29:848–54.
17. Zucchelli, G., Tavelli, L., Ravidà, A., Stefanini, M., Suárez-López Del Amo, F., & Wang, H. L. (2018). Influence of tooth location on coronally advanced flap procedures for root coverage. *Journal of periodontology*, *89*(12), 1428–1441. https://doi.org/10.1002/JPER.18-0201
18. Rateitschak, K. H., Egli, U., & Fringeli, G. (1979). Recession: a 4-year longitudinal study after free gingival grafts. *Journal of clinical periodontology*, *6*(3), 158–164. https://doi.org/10.1111/j.1600-051x.1979.tb02195.x
19. Egli, U., Vollmer, W. H., & Rateitschak, K. H. (1975). Follow-up studies of free gingival grafts. *Journal of clinical periodontology*, *2*(2), 98–104. https://doi.org/10.1111/j.1600-051x.1975.tb01730.x
20. Agudio, G., Cortellini, P., Buti, J., & Pini Prato, G. (2016). Periodontal Conditions of Sites Treated With Gingival Augmentation Surgery Compared With Untreated Contralateral Homologous Sites: An 18- to 35-Year Long-Term Study. *Journal of periodontology*, *87*(12), 1371–1378. https://doi.org/10.1902/jop.2016.160284
21. Matter J. (1980). Creeping attachment of free gingival grafts. A five-year follow-up study. *Journal of periodontology*, *51*(12), 681–685. https://doi.org/10.1902/jop.1980.51.12.681