

Free gingival grafting technique for gingival recession coverage: A 6-month follow-up interventional study

N Rajesh¹, R Poornima²

From ¹Associate Professor, Department of Dental Sciences, Maharaja Institute of Medical Sciences, Vizianagaram, Andhra Pradesh, ²Senior Lecturer, Department of Periodontology, Sri Ramakrishna Dental College and Hospital, Coimbatore, Tamil Nadu, India

ABSTRACT

Background: Both the practitioner and the patient frequently deal with gingival recession. In Miller's Classes I and II mandibular gingival recession, the goal of this study was to evaluate the predictability of the free gingival graft (FGG), as a single-step operation in terms of root coverage and esthetics. **Materials and Methods:** 10 patients between the ages of 25 and 50 who were sent to the Department of Periodontics (3 men and 7 women) made up the study group. There were a total of 14 mandibular recession sites that were chosen. Recession depth (RD), recession width, probing depth (PD), clinical attachment level (CAL), width of attached gingiva (WAG), and visual analog scale (VAS) were assessed at baseline, 3 months, and 6 months post-operatively. **Results:** The mean RD was 3.13 ± 2.0 mm at the baseline and decreased to 0.80 ± 0.78 mm after 6 months. At baseline, the VAS was 3.52 ± 0.81 , and at 6 months after surgery, it had improved to a mean of 6 ± 2.14 . From a baseline WAG of 0.35 ± 0.38 to 2.83 ± 0.68 mm, there was a significant increase with $p < 0.0001$. Six months after surgery, there was an increase in CAL, from 5.63 ± 1.12 to 1.28 ± 0.76 mm. In addition, PD improved from 1.98 ± 0.54 to 0.97 ± 0.36 mm. **Conclusion:** FGG showed statistically significant gain in recession coverage and had good esthetic score. The technique produced a reliable single-step gain in WAG as well as root coverage in cases of Miller's Classes I and II gingival recession.

Key words: Esthetics, Free gingival grafts, Gingival recession, Root coverage

The increasing interest of patients in esthetics has led to a refinement of mucogingival surgery's objectives. Both the practitioner and the patient frequently deal with gingival recession. It is described as the gingival border moving apically away from the cement-enamel junction. Root sensitivity, root caries control, esthetics, and cervical abrasion are the primary indicators of root covering [1]. The degree of recession, the width of the associated gingiva, esthetic considerations, patient comfort, and the position of the tooth in the arch must all be taken into consideration while deciding on the best approach for root coverage. Several periodontal plastic surgery techniques, including the free gingival graft (FGG), displaced flaps, pedicle grafts, and connective tissue grafts, are intended to enhance esthetics [2].

At least 50 surgical techniques have been developed to address the issue of gingival recessions, and these operations are just the tip of the iceberg. Many surgical procedures have been used with the goal of covering the roots with flaps from neighboring teeth.

Only when donor tissue is present, close to the gingival recession may these procedures be used. FGGs have been used as an alternative when donor tissue is not readily available close to the gingival recession. According to Rateitschak *et al.* longitudinal study, FGGs are superior to root covering in preventing gingival recessions by enlarging the attached gingiva's width [3].

FGG is still a reliable method for widening keratinized gingiva and slowing the progression of gingival recession, despite technical advancements in the treatment of gingival recession. FGGs currently hold an advantage over subepithelial connective tissue grafts in aspects such as simplicity, the ability to treat multiple teeth at once, ease of tissue handling, and the ability to be performed when keratinized gingiva adjacent to the involved is insufficient, despite losing the race to root coverage [4]. FGG has been evaluated in this study as a single-step treatment for mandibular Miller's Classes I and II gingival recession defects.

MATERIALS AND METHODS

10 patients between the ages of 25 and 50 who were sent to the Department of Periodontics (3 men and 7 women) made up the

Correspondence to: Dr. R Poornima, Department of Periodontology, Sri Ramakrishna Dental College and Hospital, Coimbatore, Tamil Nadu, India. E-mail: poorni89.27@gmail.com

© 2023 Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC-ND 4.0).

Access this article online

Received - 02 June 2023
Initial Review - 10 June 2023
Accepted - 19 June 2023

DOI: 10.32677/ejms.v8i2.4124

Quick Response code



study group. There were a total of 14 mandibular recession sites that were chosen. Transgingival probing was used to evaluate the gingival biotype of teeth that were close to gingival recession. For the investigation, patients with thin gingival biotypes (<1 mm) of the teeth next to recession were chosen. The teeth chosen for root covering were healthy, non-carious, and free of cervical abrasion. Scaling and root planing made up the initial course of treatment, and oral hygiene recommendations were made to encourage good oral hygiene. After 2 months, the periodontium of the patients was assessed, and locations were chosen that showed no evidence of gingival irritation or bleeding upon probing.

To eliminate any bias, the same examiner used the UNC-15 probe to analyze the following parameters at the mid-buccal aspect at baseline, 6 months, and 9 months. Recession depth (RD), width, probing depth (PD), clinical attachment level (CAL), and width of attached gingiva (WAG) are the first four parameters. A visual analog scale (VAS) was used to evaluate how well the grafts' colors matched. The 0–10 scale criteria, where 0 - no color match, 10 - absolute color match, and 5 - unsatisfactory, are used to determine color match. All patients underwent scoring at the conclusion of 1, 3, and 6 months. After obtaining sufficient local anesthesia, the exposed root surface was carefully planned.

Fig. 1 depicts the pre-operative Miller's Class II gingival recession in relation to #42. On either side of the recession at the level of the CEJ, a horizontal incision was made starting from the line angle of the neighboring teeth. At the distal terminus of the horizontal incision, two vertical incisions were created that extended deeply into the alveolar mucosa. Without disrupting the periosteum, a split-thickness flap was elevated. Fig. 2 shows the recipient bed preparation in relation to #42. Citric acid was used to modify roots for 5 min. A foil template was used to precisely calculate the required amount of donor tissue. The donor tissue was taken from the region with the greatest thickness between the 1st and 2nd premolars. Fig. 3 highlights the procurement of FGG from the donor site.

On the recipient's bed, the graft was adapted, and Holbrook and Oschenbein's suturing technique (Fig. 4) was employed [5]. The surgical wound was covered with a periodontal dressing. For 2-week following surgery, the patients were instructed to avoid brushing their teeth in that area. All the patients were prescribed 400 mg of ibuprofen 3 times/day for 5 days, 500 mg of amoxicillin 3 times/day, and 0.2% chlorhexidine mouthwash twice each day for 3 weeks. 2 weeks after surgery, the pack was removed. At 3 and 6 months, subjects were called back for follow-up. At 3 and 6 months, clinical parameters were documented. During the follow-up visit, uneventful healing was noted.

RESULTS

The mean RD was 3.13±2.0 mm at the baseline evaluation of the study and decreased to 0.80±0.78 mm after 6 months, indicating 84% coverage (Table 1). At baseline, the VAS was 3.52±0.81, and

Table 1: Clinical parameters at the baseline and after 6 months with the p-values

Parameter	Baseline	6 months	p-value
RD(mm)	3.13±2.0	0.80±0.78	<0.0001*
RW(mm)	2.42±0.17	0.10±0.23	<0.0001*
CAL(mm)	5.63±1.12	1.28±0.76	<0.0001*
PD(mm)	1.98±0.54	0.97±0.36	<0.0001*
WAG(mm)	0.35±0.38	2.83±0.68	<0.0001*

RD: Recession depth, RW: Recession width, PD: Probing depth, CAL: Clinical attachment level, WAG: Width of attached gingiva *P<0.001 is considered to be statistically significant



Figure 1: Pre-operative image showing Miller's Class II recession in relation to #42



Figure 2: Recipient bed preparation done in relation to #42

at 6 months after surgery, it had improved to a mean of 6±2.14 and satisfied the criterion. All the clinical parameters had statistically significant values before and after surgery, whereas after the surgery showed positive improvement. From a baseline WAG of 0.35±0.38 to 2.83±0.68 mm, there was a significant increase with $p<0.0001$. 6 months after surgery, there was an increase in CAL, from 5.63±1.12 to 1.28±0.76 mm. In addition, PD improved from 1.98±0.54 to 0.97±0.36 mm. RD had a negative correlation with recession width ($r=-0.38$) and a positive correlation with root coverage ($r=0.78$).

All the above-mentioned findings suggest that FGG can still be considered as one of the most successful procedures to attain recession coverage as well as improve the attached gingiva width. Figs. 5 and 6 show the 3- and 6-month post-operative healing and recession coverage in relation to #42.

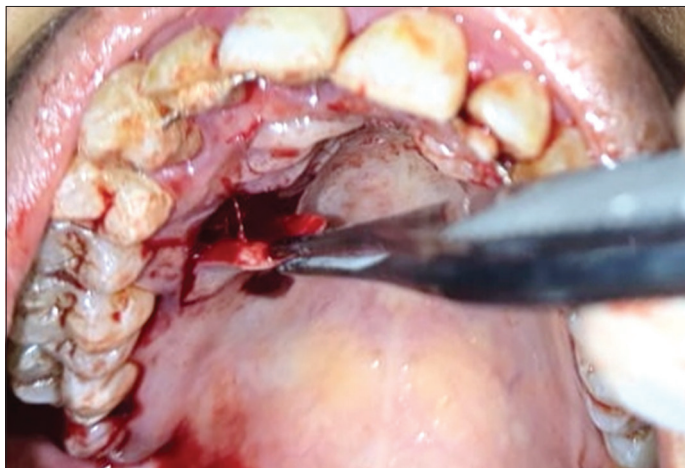


Figure 3: Procurement of free gingival graft, from the maxillary palatal aspect



Figure 4: Holbrook and Oschenbein's suturing of the free gingival graft in relation to #42



Figure 5: Healing of the recipient site showing complete recession coverage in relation to #42 at 3 months

DISCUSSION

Various mucogingival techniques have successfully covered exposed roots for esthetic and functional reasons. Because of this, the dentist must develop novel ways to meet these needs without sacrificing comfort and esthetics. Various root-covering



Figure 6: Healing of the recipient site showing complete recession coverage and improved esthetics in relation to #42 at 6 months

approaches are currently available; however, it is frequently challenging to anticipate the success rate of these treatments since it depends on a number of variables, including the location and classification of the recession and the surgical technique used [6].

According to the present study's findings, FGG is a successful method for covering roots and is also esthetically pleasing. Both the practitioner and the patient must deal with gingival recession. There are many different treatment techniques available, and the procedure to be used will rely on the local anatomical conditions, the operator of choice, and the patient's comfort. A sufficient amount of keratinized gingiva acts as a barrier to physical injury and the development of future recession. Although there is not a unified perspective on how much gingiva is necessary for maintaining periodontal health, it is generally believed that areas with <2 mm of keratinized gingiva are more prone to recession [7].

A coverage of 40–70% utilizing FGG in Classes I and II recessions has been found in earlier research. The apparent disadvantage of the poor color match and donor site morbidity makes FGG inappropriate for use as a root coverage process, notwithstanding Miller's suggestion that it is a predictable method [8]. However, despite the development of allogeneous grafts such as Alloderm and subepithelial connective tissue grafts, FGG remains the most expected way to expand the apicocoronal dimension of the keratinized mucosa.

It has been proven that FGG performs less predictably and has lower success rates than connective tissue grafts. Inadequate graft size and thickness, dehydration of donor tissue, inadequate adaptation of the graft to the root and remaining periosteal bed, failure to stabilize the graft, excessive or prolonged pressure in coaptation of sutured grafts, improper recipient site preparation, improper classification of marginal tissue recession, excess or prolonged pressure in coaptation of sutured grafts, and reduction of inflammation are some causes of incomplete root coverage [9].

Because mandibular gingiva is less demanding visually for patients than maxillary gingiva, only mandibular recession problems are studied. In addition, the majority of research in the literature give combined results of maxillary and mandibular

recession abnormalities. The treatment outcomes for the two arches are not comparable because of anatomical issues. FGG still has an advantage over connective tissue grafting in terms of ease and invasiveness of the treatment even though it is now trailing behind the latter [10].

The main esthetic drawback of FGG is highlighted, but in contrast to prior published articles, the present study reports satisfactory esthetic results [11]. Nearly 75% of patients were happy with the esthetic outcomes. It might be because the community under study had a higher level of melanin pigmentation than studies conducted previously in populations with lower levels of melanin pigmentation. Within 6 months, pigmentation returned, which contributed to the high VAS score. It is also likely that the demographic examined in this study had lower expectations for esthetics and was more focused on root coverage. The study's findings showed 84% root coverage in Miller recession Classes I and II, which are esthetically acceptable outcomes.

CONCLUSION

FGG is still a predictable procedure to improve the WAG and to attain recession coverage. However, the possibility of color mismatch and graft rejection cannot be completely overlooked. Long-term randomized controlled trials must be carried out with VAS being one of the parameters assessed to estimate the esthetic outcome of FGG.

REFERENCES

1. Wennström JL. Mucogingival therapy. *Ann Periodontol* 1996;1:671-701.
2. Miller PD Jr. Root coverage using the free soft tissue autograft following citric acid application. III. A successful and predictable procedure in areas of deep-wide recession. *Int J Periodontics Restorative Dent* 1985;5:14-37.
3. Rateitschak KH, Egli U, Fringeli G. Recession: A 4-year longitudinal study after free gingival grafts. *J Clin Periodontol* 1979;6:158-64.
4. Bouchard P, Malet J, Borghetti A. Decision-making in aesthetics: Root coverage revisited. *Periodontol 2000* 2001;27:97-120.
5. Holbrook T, Ochsenein C. Complete coverage of the denuded root surface with a one-stage gingival graft. *Int J Periodontics Restorative Dent* 1983;3:8-27.
6. Hangorsky U, Bissada NF. Clinical assessment of free gingival graft effectiveness on the maintenance of periodontal health. *J Periodontol* 1980;51:274-8.
7. Lang NP, Loe H. The relationship between the width of keratinized gingiva and gingival health. *J Periodontol* 1972;43:623-7.
8. Camargo PM, Melnick PR, Kenney EB. The use of free gingival grafts for aesthetic purposes. *Periodontol 2000* 2001;27:72-96.
9. Remya V, Kumar KK, Sudharsan S, *et al.* Free gingival graft in the treatment of class III gingival recession. *Indian J Dent Res* 2008;19:247-52.
10. Rocuzzo M, Bunino M, Needleman I, *et al.* Periodontal plastic surgery for treatment of localized gingival recessions: A systematic review. *J Clin Periodontol* 2002;29 suppl 3:178-94; discussion 195-6.
11. Oates TW, Robinson M, Gunsolley JC. Surgical therapies for the treatment of gingival recession. A systematic review. *Ann Periodontol* 2003;8:303-20.

Funding: Nil; Conflicts of Interest: None Stated.

How to cite this article: Rajesh N, Poornima R. Free gingival grafting technique for gingival recession coverage: A 6-month follow-up interventional study. *Eastern J Med Sci.* 2023;8(2):37-40.