

Research Article

# Subjective Evaluation of Lateral Pedicle Graft and Free Mucosal Graft for Donor Site Morbidity and Aesthetics in Localized Gingival Recessions

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## Abstract

**Background and aims.** Localized gingival recession presents as a special therapeutic problem. Subjective parameters and donor site morbidity are often overlooked while deciding on any treatment option.

**Materials and methods.** 22 subjects were equally divided in Group A (Lateral pedicle graft) and Group B (Free mucosal graft). Subjective evaluation of post operative sensitivity, discomfort and bleeding at donor site, and patient perception of aesthetics was done.

**Results.** Both groups showed the potential of achieving root coverage; however on comparison between the two groups, lateral pedicle flap showed improved patient perceived Quality of Life as compared to free mucosal graft, although clinical results were statistically non significant.

**Conclusion.** Lateral pedicle graft is associated with less donor tissue morbidity and is well tolerated by the patient as compared to free mucosal graft.

**Key words:** Esthetics, gingival recession, plastic surgery, quality of life.

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## Introduction

The main goal of periodontal therapy is to improve periodontal health and thereby to maintain patient's functional dentition throughout life. Periodontal disease is characterized by loss of clini-

cal attachment which may be manifested in the form of pocket formation, recession or both. Gingival recession is defined as exposure of the root surface due to the apical migration of the marginal gingiva.<sup>1</sup> Exposed root surfaces are associated with dental hypersensitivity, root caries, limitations in proper plaque

control and maintenance of adequate oral hygiene measures.

A localized gingival recession continues to be a special therapeutic problem. Patient acceptance and desire for cosmetic dentistry have increased the demand for root coverage procedures. Several techniques have been advocated for covering exposed root surfaces with conflicting rates of success.<sup>2,3</sup> While assessing the results, morbidity associated with donor site and patient's discomfort during graft procurement and initial healing phase is often overlooked.

The purpose of the present study was to gain insight into the patient's perception of oral aesthetics and to investigate and extrapolate from the patient's standpoint the use of the lateral pedicle flap or free mucosal graft for the ease of treatment of localized gingival recessions.

### **Materials and Methods**

Twenty two subjects with no gender bias were selected from the patients undergoing periodontal therapy in the Periodontics Clinic of a single institute in India. The patients were selected in the age group of 18- 45 years with Miller's Class I or II gingival recession. Exposed root surfaces free of restorative margins or caries and teeth with no clinical mobility were included in the study. Phase I therapy was carried out for all cases. Patients were observed for 2 weeks after initial therapy on their ability to achieve adequate plaque control and if deemed fit, were only then considered in the study. A written consent was taken from all the selected patients before the surgery.

The selected 22 subjects were randomly divided in two groups of 11 patients each: Group A and Group B. Patients of Group A were treated with lateral pedicle flap and that of Group B with autogenous free mucosal grafts for coverage of denuded roots.

Surgical techniques are as follows: In brief, adequate anaesthesia of the surgical site was achieved through local infiltration or bilateral mental nerve blocks of lidocaine containing adrenaline in ratio of 1:100,000 for both groups. For Group A, after removing the tissue lining, mesial margin of the defect was beveled externally and distal beveled internally; so that when the repositioned flap was transposed and secured, it onlaid over the beveled recipient site. The dimensions of the pedicle graft were determined by measuring the coronal width of the receptor site at the level of the cemento-enamel junction with a probe. The donor width was kept one and a half times greater than the width of the defect. An inci-

sion was made paralleling the incision made on the mesial side of the defect. This incision was made to extend several millimeters apical to the mucogingival junction (MGJ) to provide adequate mobility to the flap. Corn's cut back incision was placed at the base to further relieve the flap. Full thickness flap was raised and laterally repositioned to drape passively over the defect site. Pressure was applied against the flap for 2-3 minutes prior to suturing. Sling suture with 5.0 silk suture materials was placed at the coronal margin of the flap and interrupted sutures along the lateral margins. Periodontal dressing was then applied.

For Group B, the recipient bed area was demarcated by first placing horizontal incisions, at the level of the cemento enamel junction, in the interdental tissues on each side of the tooth with the recession defect. Subsequently, two vertical incisions, extending from the incision line were placed in the interdental tissue to the level approximately 4-5 mm apical to the recession. A horizontal incision was then made, connecting the vertical incisions at their apical termination. Starting from an intracrevicular incision, a split incision was made to sharply dissect the epithelium and the outer portion of the connective tissue within the demarcated area. To ensure that a graft of adequate size and proper contour was obtained from the donor area, a foil template of the recipient site was prepared and transferred to the donor area. Free mucosal graft was obtained from the premolar- molar region of the hard palate. Once the graft was outlined undermining dissection of the graft was done using a 15 No. Bard Parker blade and Mead elevator. A free mucosal graft of approximately 1.0 to 1.5 mm thickness was removed. After washing the recipient site with saline, the graft was immediately placed on the prepared recipient bed. Sutures were placed interproximally and at the lateral margins with 5.0 silk suture materials.

Subjective evaluation of post operative sensitivity, discomfort and bleeding at donor site, and patient perception of aesthetics was done. Sensitivity was evaluated using air spray or by means of an explorer on the exposed root surface. It was assessed through a formulated scale of 0-2.

0. no sensitivity
1. mild sensitivity (tolerable)
2. severe sensitivity (not tolerable)

Discomfort at donor site was assessed as the level of pain and variation of eating habits experienced by the patients during the 1, 2, 3 and 4 postoperative weeks. Post operative pain was subjectively evaluated and recorded as follows<sup>4</sup>

- 0. no pain (no analgesic required)
- 1. mild/moderate pain (controlled with analgesic)
- 2. severe pain (not controlled with analgesic)

Variation of eating habits was monitored as a change in patient's diet on the basis of its content and quality (liquid, soft or hard) and temperature of food (cold, tepid or warm).

- 0. Normal—no change in quality or temperature of food (Eating hard and warm food)
- 1. Mild—change in either quality or temperature of food
- 2. Severe—change in both quality and temperature of food.

Immediate and delayed bleeding at donor site was recorded<sup>4</sup>. Immediate bleeding (iB) was recorded after suturing the donor area and 2 min of external pressure with a sterile gauze. Hemostasis was confirmed when no bleeding was actively seen and a clinical photograph of the wound could be taken without need for a suction. Delayed bleeding (dB) was recorded as prolonged hemorrhaging from the donor area during the post surgical period reported by the patient. The numbers of these kinds of complications were recorded for each surgical technique, if present.

Esthetic results were assessed subjectively at 90 days. Patients were asked their views regarding color matching between the graft and the adjacent gingiva. Scoring was given as:

- 0. satisfied
- 1. not satisfied

**Results**

The values were represented in Number (%) and Mean ± SD. Due to non-normal distribution of data and frequency of cells being less than 5 statistical analyses could not be performed. Chi square test was performed for postoperative aesthetics. A P value < 0.05 was considered significant.

Dentinal hypersensitivity was evaluated pre operatively and post operatively. Mild hypersensitivity was reported in both the groups.

Evaluation of post operative discomfort at donor site showed decreased severity of pain and lesser difficulty in eating for Group A.

Post operative bleeding at the donor site was evaluated subjectively. Group A showed a lesser tendency for immediate bleeding (n =2) and no post operative bleeding incidents were reported. Group B showed an increased tendency for immediate post operative bleeding (n =11). Post operative bleeding were also reported at the end of 1 week (n =2). No

such incidents were reported thereafter in the present study.

There was no significant difference observed statistically ( $\chi^2 = 0.73$ ) ( $p \geq 0.05$ ) regarding the aesthetic appearance by the patients in both the groups.

**Discussion**

The study was based on the reliability of the subjective parameters such as delayed bleeding, esthetic evaluation, pain and eating habit in assessment of the results of two pioneering periodontal plastic procedures. This lack of absolute objectivity does not, however, preclude the use of subjective measures for research purposes, nor imply that they are not clinically relevant, as the patient factor should always be considered when choosing a course of treatment.

In the present study not much difference in pre and post operative sensitivity was observed (Table 1). Preoperatively, sensitivity may be due to root expo-



Group A: Preoperative view



Group A: Immediate Post operative



Group A: 90 days postoperative

**Figure 1. Clinical picture of Group A.**

**Table 1. Subjective evaluation of dentinal sensitivity pre- and post-operatively**

Grade	Group A		Group B	
	Pre-op	Post-op	Pre-op	Post-op
0	2	3	1	2
1	6	7	8	9
2	3	1	2	-

**Table 2. Subjective evaluation of post operative discomfort at donor site**

Pain	2nd week		4th week	
	A	B	A	B
0	5	1	11	9
1	6	8	-	2
2	-	2	-	-

  

Eating habit	2nd week		4th week	
	A	B	A	B
Normal	-	4	11	5
Mild	11	7	-	6
Severe	-	-	-	-

**Table 3. Evaluation of post operative bleeding complications at donor site**

	Immediate post-op	1 <sup>st</sup> week	2 <sup>nd</sup> week
GROUP A	2	-	-
GROUP B	11	2	-

**Table 4. Subjective evaluation of postoperative esthetics**

Opinion	Group A	Group B
Satisfied	7	5
Not Satisfied	4	6

sure. Post operatively, persistence of sensitivity may be related to surgical manipulation, thorough scaling and root planing and coronoplasty for reduction of root prominence. Jahnke et al<sup>5</sup> found root sensitivity in all the cases of free mucosal graft with less than 100% root coverage.

The donor site was evaluated for comparing the morbidity associated with both the techniques. The main disadvantage of free mucosal graft according to Zuccheli et al<sup>6</sup> was the double surgical wound and discomfort suffered by the patient. On the other hand, Guinard and Caffesse<sup>7</sup> found lateral pedicle flap to be associated with recession at the donor site.

Subjective evaluation for post operative discomfort at donor site was done. Group A was associated with increase pain and change in eating habit compared to Group B. The duration for discomfort was also more in Group B. More problems for free mucosal graft were present in the first 2 post operative weeks, as is also observed in other studies (Table 2).<sup>4,8</sup>

Post operative bleeding complications showed variation in between groups. Immediate post operative bleeding was present in all the cases of Group B but only in 2 cases for Group A. No incidence of delayed

bleeding was seen in Group A whereas 2 cases reported delayed bleeding at the end of 1st postoperative week in Group B (Table 3). Saroff<sup>9</sup> evaluated that nearly 20 minutes were taken in achieving hemostasis at the palatal donor site when graft of 1.0-1.5 mm thickness was harvested. No incidence of secondary bleeding was reported. The time taken in the present study was not evaluated, however before applying periodontal dressing complete haemostasis was achieved. Del Pizzo et al<sup>4</sup> reported a few cases of immediate post operative bleeding for free mucosal graft. Delayed bleeding was reported till the end of 2nd week and not thereafter. This is in agreement with the findings of the present study.

Subjective evaluation regarding esthetics was done for both the groups (Table 4). In the present study patients did not complain of any significant difference in any of the two groups which is not in conformity with the other studies.<sup>8,10,11</sup> In a review by Tackas<sup>11</sup> lateral pedicle flap was found to be more esthetic than free mucosal graft.

In studies by Miller,<sup>12</sup> Laney et al,<sup>13</sup> and Jahnke et al<sup>8</sup> color match of the free mucosal graft with the adjoining tissues was found to be unmatchable. However, these studies utilize a thicker graft of  $\geq 2$



Group B: Preoperative



Group B: One week Postoperative



Group B: 90 Days Postoperative

**Figure 2. Clinical picture of Group B.**

mm which could account for unesthetic results. Soehren et al<sup>14</sup> in their study found thicker grafts to be associated with tire patch appearance. However, grafts of 1- 1.5 mm thickness provided good cosmetic results. This is consistent with the findings of the present study.

In conclusion, it can be said that patient's comfort is an important parameter to be kept in mind while selecting any treatment module. Lateral pedicle graft and free mucosal grafts are the pioneering pure mucogingival procedures, with good clinical outcomes. Both are cost effective as no additional material cost is involved and are therefore frequently used. In this study, donor site morbidity is observed more with free mucosal grafts however aesthetic results for both techniques are similar. This is a small study with small sample size and only two techniques are considered; further studies evaluating subjective measures for other plastic procedures may be beneficial for clinicians.

### References

1. Carranza FA and Rapley JW. Clinical Features Of Gingivitis. In: Newman MC, Takei HH, Carranza FA. *Clinical Periodontology* 9th ed. W.B. Saunders Publishing 2003: 275.
2. Rocuzzo M, Bunino M, Needleman I and Sanz M. Periodontal Plastic Surgery For Treatment Of Localized Gingival Recessions: A Systematic Review. *J Clin Periodontol* 2002; 29: 178-94. [doi:10.1034/j.1600-051x.29.s3.11.x](https://doi.org/10.1034/j.1600-051x.29.s3.11.x)
3. Pagliaro U, Nieri M, Franceschi D, Clauser C, Pini-Prato G. Evidence Based Mucogingival Therapy. Part I: A Critical Review Of The Literature On Root Coverage Procedures. *J Periodontol* 2003; 74: 709-40. [doi:10.1902/jop.2003.74.5.709](https://doi.org/10.1902/jop.2003.74.5.709)
4. Del Pizzo M, Modica F, Bethaz N, Priotto P and Romagnoli R. The Connective Tissue Graft: A Comparative Clinical Evaluation Of Wound Healing At The Palatal Donor Site. A Preliminary Study. *J Periodontol* 2002; 29: 848-54. [doi:10.1034/j.1600-051x.2002.290910.x](https://doi.org/10.1034/j.1600-051x.2002.290910.x)
5. Jahnke PV, Sandifer JB, Gher ME, Gray JL and Richardson C. Thick Free Gingival And Connective Tissue Autografts For Root Coverage. *J Periodontol* 1993; 64: 315-22. [doi:10.1902/jop.1993.64.4.315](https://doi.org/10.1902/jop.1993.64.4.315)
6. Zucchelli G, De Sanctis M. Treatment Of Multiple Recession Type Defects In Patients With Esthetic Demands. *J Periodontol* 2000; 71: 1506-14. [doi:10.1902/jop.2000.71.9.1506](https://doi.org/10.1902/jop.2000.71.9.1506)
7. Guinard EA and Caffesse RG. Treatment of localized gingival recessions. Part I. Lateral sliding flap. *J Periodontol* 1978; 49: 351-6. [doi:10.1902/jop.1978.49.7.351](https://doi.org/10.1902/jop.1978.49.7.351)
8. Jahnke PV, Sandifer JB, Gher ME, Gray JL and Richardson C. Thick Free Gingival And Connective Tissue Autografts For Root Coverage. *J Periodontol* 1993; 64: 315-22. [doi:10.1902/jop.1993.64.4.315](https://doi.org/10.1902/jop.1993.64.4.315)
9. Saroff SA, Chasens AI, Eisen SF and Levey SH. Free Soft Tissue Autografts- Hemostasis And Protection Of Donor Site With A Microfibrillar Collagen Preparation. *J Periodontol* 1982; 53: 425-8. [doi:10.1902/jop.1982.53.7.425](https://doi.org/10.1902/jop.1982.53.7.425)
10. Breault LG, Fowler EB and Billman MA. Retained Free Gingival Graft Rugae: A Nine Year Case Report. *J Periodontol* 1999;70: 438-40. [doi:10.1902/jop.1999.70.4.438](https://doi.org/10.1902/jop.1999.70.4.438)
11. Tackas VJ. Root Coverage Techniques: A Review. *J West Soc Periodontol Periodontol Abstr* 1995; 1:1-9.
12. Miller PD. Root Coverage With The Free Soft Tissue Autograft Following Citric Acid Application. III. A Successful And Predictable Procedure In Areas Of Deep Wide Recession. *Int J Perio Rest Dent* 1985; 5:14-37.
13. Laney JB, Saunders VG and Garnick JJ. A Comparison Of Two Techniques For Attaining Root Coverage. *J Periodontol* 1992; 63: 19-23. [doi:10.1902/jop.1992.63.1.19](https://doi.org/10.1902/jop.1992.63.1.19)
14. Soehren SE, Allen AL, Cutright DE and Seibert JS. Clinical And Histologic Studies Of Donor Tissues Utilized For Free Grafts Of Masticatory Mucosa. *J Periodontol* 1973; 44: 727-41. [doi:10.1902/jop.1973.44.12.727](https://doi.org/10.1902/jop.1973.44.12.727)