Case Report

Evaluating the Success of Lateral Pedicle Flap Using Root Coverage Esthetic Score – A Case Series

C. Hemachandra Babu[1,2], Asma Naaz[1,2], S. Vijayashanthi[1,2], Vijendar Bhukya[1,2]*

[1]Department of Periodontics, Meghna Institute of Dental Sciences, Mallaram, Nizamabad, Telangana, India.
[2]Department of Periodontics, Kaloji Narayana Rao University, Telangana, India.

Abstract

Laterally pedicle flap is widely used for treating millers Class-I and Class-II recession defects. Usually, esthetic outcomes following root coverage procedures are not assessed. This article is a case series which highlights on the root coverage esthetic score in which lateral pedicle flap has been used for root coverage in Millers Class-I gingival recession defect in mandibular anterior region. About 100% root coverage was obtained with no change in the position of gingiva at the donor site.

Keywords: Lateral pedicle flap, Class-I recession, Periodontal plastic surgery, Root coverage esthetic score

Introduction

Root coverage procedures are usually indicated for esthetic reasons, to reduce root sensitivity, to remove muscle pull, and to create or augment keratinized tissue.[1] Clinical outcomes following root coverage procedures are generally reported in terms of the percentage of root coverage and sometimes in terms of complete root coverage (CRC).[2] A study evaluating the esthetic perception of simulated root coverage procedures on photographs showed that CRC is considered the most important outcome by patients, dentists, and periodontists.[3] In fact, esthetic failure may occur in cases of partial root coverage, as well as with poor color match, malalignment of the mucogingival junction (MGJ), and keloid-like texture.[2]

Patient esthetic demands have become more demanding; thus, root coverage procedures should provide soft-tissue anatomy comparable to or indistinguishable from adjacent tissue.[4] To achieve this goal, mucogingival techniques used to treat gingival recession defects have improved. Free gingival grafts,[5] although effective in gaining root coverage, are compromised esthetically, hence lateral pedicle flap was 1st described by Grupe and Warren (1956) which is allowing good esthetics, increased attached gingiva, and decreased root sensitivity.

In this case series, esthetic outcomes were assessed after 6 months using the root coverage esthetic score (RES) proposed by P.D. Miller's 2009. This score evaluates five variables, that is, the level of the gingival margin, marginal tissue contour, soft-tissue texture, gingival color, and MGJ alignment. Because CRC was the primary treatment goal, and the other variables were considered secondary, the value assigned for root coverage was 60% of the total score, whereas 40% was assigned to the other four variables. With regard to the assessment of the final position of the gingival margin, 6 points were given for CRC; 3 points were given for partial root coverage; and 0 points were assigned when the final position of the gingival margin was apical or equal to the previous recession. One point was given for each of the other four variables. Thus, 10 points were an ideal score [Table 1].

Esthetic assessment is subjective and might be influenced by cultural lifestyle. However, an objective esthetic evaluation should be useful when the outcomes of esthetic surgery are assessed. Therefore, this case series focused on, the RES, to assess the esthetic outcomes following root coverage procedures (laterally pedicle flap) on Miller Class I gingival recession defects.

Access this article online

Website: www.jrad.co.in

DOI: https://doi.org/10.53064/jrad.2021.12.5.46

Address for correspondence: DR. S. Vijayashanthi, Meghna Institute of Dental Sciences, Mallaram, Nizamabad, Telangana, India/Kaloji Narayana Rao University, Telangana, India.
Email: shanthisheela29@gmail.com

Received: May 02, 2021; **Accepted:** May 28, 2021; **Published:** Aug 02, 2021

How to cite this article: Babu CH, Naaz A, Vijayashanthi S, Bhukya V. Evaluating the Success of Lateral Pedicle Flap Using Root Coverage Esthetic Score – A Case **Series.** J Res Adv Dent 2021;12(5):1-283.

CASE 1

A 20-year-old female patient presented to the Department of Periodontology and Oral Implantology, Meghna Institute of Dental Sciences, KNRUHS, Nizamabad, with chief complaint of receding gum and unpleasant esthetics in lower front tooth region. She was systemically healthy with no adverse habits. Intraoral examination revealed isolated recession on mandibular left central incisor (31) with good oral hygiene [Figure 1a]. A vertical recession defect of 3 mm was apparent on the mid-buccal surface of 31. The keratinized tissue on the adjacent tooth was adequate. After Phase I therapy, with the patient consent, it was decided to surgically treat the case by the lateral pedicle flap. The result after 6 months was CRC with the RES score 10 [Figure 1b].

Surgical Procedure

After proper isolation, the operative site was anesthetized using 2% lignocaine with 1:100,000 adrenaline.

Table 1: Root coverage esthetic score (RES) criteria[7]

S. No.	Variable	Clinical presentation	Score
1.	Level of gingival margin	Complete root coverage	6
		Partial root coverage	3
		No root coverage or apical to previous position	0
2.	Marginal tissue contour	Arcuate	1
		Flat/No arcuate	0
3.	Soft-tissue texture	No scar	1
		Keloid-like texture/persistent scars along incision lines	0
4.	Mucogingival junction	MGJ aligned with the MGJ OF adjacent teeth	1
		MGJ not aligned with the MGJ of adjacent teeth	0
5.	Gingival color	Normal color and integration with the adjacent soft tissues.	1
		Color of tissue varies from gingival color at adjacent teeth	0

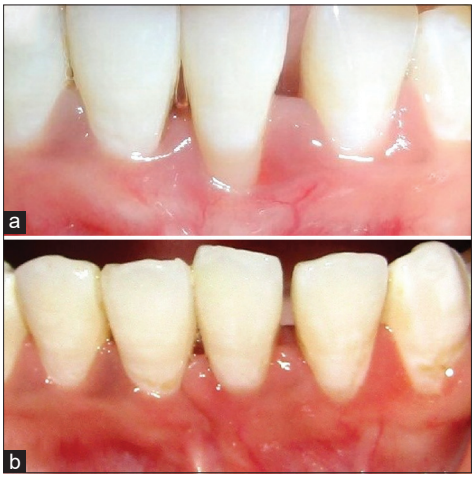

Figure 1: (a) Pre-operative image with 3 mm of gingival recession, (b) 6 months view with RES score 10 (level of gingival margin [score 6], marginal tissue contour [score 1], soft-tissue texture [score 1], mucogingival junction [score 1], gingival color [score 1])

Incision of free gingiva in the gingival recession area: A no.15 blade is used to make v-shaped incision that crosses the apical area of gingival recession and then removed with a curette. An external bevel is provided on the distal aspect of 31, to which the pedicle flap will be displaced to overlap the connective tissue of the recipient site [Figure 2a].

Pedicle flap preparation: An internal bevel incision is made toward the bone from the free gingival margin on the donor site. An internal bevel incision is made apical to the gingival margin to protect the mesial interdental papilla of 31. A vertical incision is prepared at the distal line angle area at least 1 ½ teeth away from recipient site. A no.15 blade is inserted into the area apical to the MGJ and small tissue pliers are used to lift the flap margin. The pedicle flap is reflected sufficiently to enable displacement without any tension [Figure 2b]. A full-thickness flap is prepared in the gingival region and a partial-thickness flap prepared in the alveolar mucosa area. Root planing of the exposed root surface is performed with a curette and root conditioning done with tetracycline solution for 3 min. After root planing and conditioning, the pedicle flap is placed on to the recipient site and sutured using 4.0 bio absorbable Vicryl material [Figure 2c and d].

And then, tinfoil and soft periodontal pack was placed extending it interdentally and onto the lingual surface to secure. Amoxicillin (500 mg) and ibuprofen (400 mg) 3 times a day were prescribed postoperatively for 5 days. Pack and sutures were removed after 14 days. The recession was completely covered and there was no apical displacement of gingiva at the donor site. Regular post-operative follow-up was done up to 6 months. Moreover, 100% root coverage was obtained

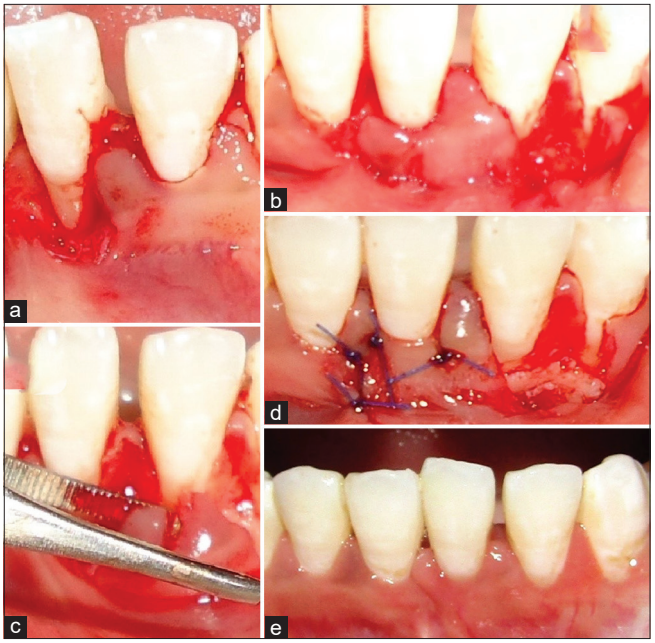

Figure 2: (a) Incisions given, (b) mobilized flap, (c) displaced flap on to recipient site, (d) suturing done using 4.0 Vicryl sutures, (e) 6 months follow-up

along with no change in position of gingival at the donor site (figure 2e).

CASE 2

A 30-year-old male patient presented to the Department of Periodontology and Oral Implantology, Meghna institute of Dental Sciences, KNRUHS, Nizamabad, with chief complaint of receding gum and unpleasant esthetics in lower front tooth region. He was systemically healthy with no adverse habits. Intraoral examination revealed isolated recession on mandibular left central incisor (31) with good oral hygiene. A vertical recession defect of 3 mm was apparent on the mid-buccal surface of 31. The keratinized tissue on the adjacent tooth was adequate. After Phase I therapy, with the patient consent, it was decided to surgically treat the case by the lateral pedicle flap. The result after 6 months was complete root coverage with the RES score 10 [Figure 3a and b].

CASE 3

A 28-year-old female patient presented to the Department of Periodontology and Oral Implantology, Meghna Institute of Dental Sciences, KNRUHS, Nizamabad, with chief complaint of receding gum and unpleasant esthetics in lower front tooth region. She was systemically healthy with no adverse habits. Intraoral examination revealed isolated recession on mandibular left central incisor (31) with good oral hygiene. A vertical recession defect of 3 mm was apparent on the mid-buccal surface of 31. The keratinized tissue on the adjacent tooth was adequate. After Phase I therapy, with the patient consent, it was decided to surgically treat the case by the lateral pedicle flap. The result after 6 months was CRC with the RES score 10 [Figure 4a and b].

Discussion

The surgical treatment of gingival recessions is performed for functional and esthetic reasons: The final outcome should satisfy patients and clinicians. Nevertheless, esthetic satisfaction following root coverage procedures is hardly investigated in clinical trials.[6] Because the esthetic evaluation is influenced by subjective perceptions by both patients and clinicians, an attempt to categorize esthetic assessments can be useful in the evaluation of root coverage outcomes.[7]

The evaluation period used in this case series was 6 months from the last surgical treatment because this period is considered adequate to provide soft-tissue maturity and stability as reported in systematic reviews dealing with root coverage procedures.[8] However, the RES system may be used at different times of healing phase to assess possible soft-tissue modifications, such as creeping attachment.[9] This assessment does not consider the type of procedure (gingival margin apical or equal to the baseline recession) and/or if the partial or total loss of interproximal papilla occurs following treatment. A gingival margin apical to the CEJ results in partial root coverage; therefore, it must be considered a partial success (3 points). CRC with a final gingival margin at or slightly covering the CEJ in conjunction with a physiological sulcus depth represents the best outcome (6 points).[10]

In all the three cases, RES was 10 and was scored as level of gingival margin (score 6), marginal tissue contour (score 1), soft-tissue texture (score 1), mucogingival junction (score 1), and gingival color (score 1).

The technique of lateral pedicle flap (LPF) was selected because of the good periodontal conditions of the neighboring area showing a large keratinized gingiva and vestibular depth. LPF is more advantageous than other root coverage techniques. The advantages of this technique are esthetic color matching, reduced hypersensitivity, and good blood supply to the reflected flap with high percentage of root coverage. The disadvantage of this technique is possible bone loss and gingival recession at the donor site.[11]

However, there are still many limitations, which need to be considered when this technique is applied. These include: The

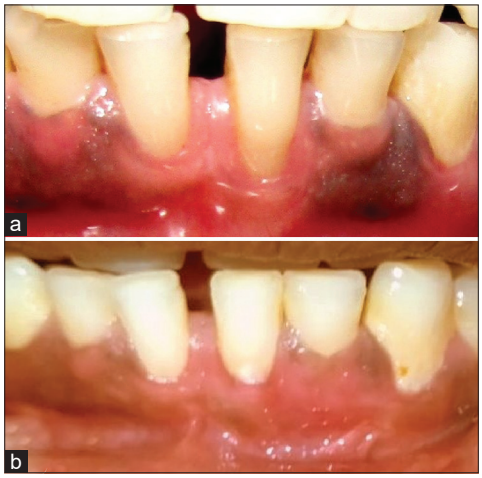

Figure 3: (a) Pre-operative image with 3 mm of gingival recession, b 6 months view with RES score 10 (level of gingival margin [score 6], marginal tissue contour [score 1], soft-tissue texture [score 1], mucogingival junction [score 1], gingival color [score 1])

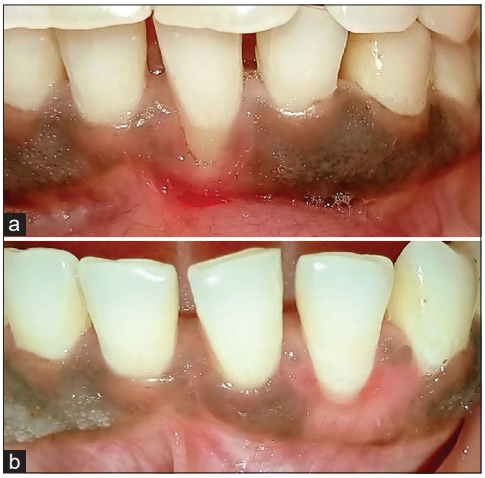

Figure 4: (a) Pre-operative image with 3 mm of gingival recession. (b) 6 months view with RES score 10 (level of gingival margin [score 6], marginal tissue contour [score 1], soft-tissue texture [score 1], mucogingival junction [score 1], gingival color [score 1])

interdental papillary tissue adjacent to the area of the recession should be thick, there should be no deep pockets and bone loss beyond the MGJ at the interdental areas of the affected teeth, separate surgical procedures are needed in presence of multiple adjacent recessions, and a shallow vestibule also may jeopardize outcomes.[12]

Conclusion

In the present case series, a lateral pedicle flap was used to cover Miller Class-I recession defect in the left mandibular central incisor in all the three cases. This technique has been demonstrated to be a reliable and predictable treatment modality for obtaining esthetic root coverage in Miller Class-I recession defect. However, careful case selection and surgical management are important for successful outcome to be achieved. The RES system may be a useful tool for assessing the esthetic outcome following root coverage procedures.

References

1. American Academy of Periodontology. Consensus report. Mucogingival therapy. Ann Periodontol 1996;1:702-6.
2. Cairo F, Pagliaro U, Nieri M. Treatment of gingival recession with coronally advanced flap procedures. A systematic review. J Clin Periodontol 2008;35(Suppl 8):136-62.
3. Rotundo R, Nieri M, Mori M, Clauser C, Prato G. Aesthetic perception after root coverage procedure. J Clin Periodontol 2008;35:705-12.
4. 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.
5. Raetzke PB. Covering localized areas of root exposure employing the ‘‘envelope’’ technique. J Periodontol 1985;56:397-402.
6. Wang HL, Bunyaratavej P, Labadie M, Shyr Y, MacNeil RL. Comparison of 2 clinical techniques for treatment of gingival recession. J Periodontol 2001;72:1301-11.
7. Cairo F, Rotundo R, Miller PD Jr., and Prato GP. Root coverage esthetic score: A system to evaluate the esthetic outcome of the treatment of gingival recession through evaluation of clinical cases. J Periodontol 2009;80:705-10.
8. Roccuzzo M, Bunino M, Needleman I, Sanz M. Periodontal plastic surgery for treatment of localized gingival recessions: A systematic review. J Clin Periodontol 2002;29:178-94.
9. Matter J. Creeping attachment of free gingival grafts. A five-year follow-up study. J Periodontol 1980;51:681-5.
10. Miller PD Jr. Root coverage with the free gingival graft. Factors associated with incomplete coverage. J Periodontol 1987;58:674-81.
11. Guinard EA, Caffese RG. Treatment of localized gingival recession part-I lateral sliding flap. J Periodontol 1978;49:351-6.
12. Anita V, Vijayalakshmi R, Bhavna J, Ramakrishnan T, Aravindkumar, Bali V. Double laterally rotated bilayer flap operation for treatment of gingival recession: A report of two cases. J Indian Soc Periodontol 2008;12:51-4.