Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies *NLM ID: 101716117*

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Index Copernicus value = 85.10

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Case Report

Management of Isolated Gingival Recession using laterally moved, coronally advanced flap: A case report

Maj (Dr) Deepak Sharma, Col (Dr) T Prasanth, Lt Col (Dr) Manab Kosala, Brig (Dr) S K Bhandari, Surg Lt Cdr (Dr) Muneesh Joshi

Division of Periodontology, Department of Dental Surgery and Oral Health sciences, Armed Forces Medical College, Pune, Pin- 411040, India

ABSTRACT:

Gingival recession is defined as the apical migration of gingival margin below cemento-enamel-junction. Exposed root surfaces can lead to hypersensitivity, increased plaque accumulation, poor aesthetics, root caries, non-carious cervical lesions (NCCL) and attachment loss. Surgical root coverage techniques include pedicle grafts, such as coronally advanced flap, rotational lateral positional flaps (LPF), double papilla flaps, free grafts such as sub epithelial connective tissue grafts and free gingival grafts and guided tissue regeneration using barrier membranes. Lateral positioned flap is commonly used to cover isolated denuded roots with adequate vestibule depth and donor tissue adjacent to the recession area. LPF offers single surgical site, preserved blood supply to the flap and excellent aesthetics due to harmonization of color. Various modifications of the laterally sliding flap have been proposed to reduce the risk of post-surgical recession at the donor tooth site, but the reported root coverage predictability was quite low. This case report demonstrates the management of class II Millers recession, using 'Laterally moved, Coronally advanced flap'. The case demonstrated 100% root coverage at 6 months follow up.

Keywords: Gingival recession, Pedicle flap; Zucchelli's technique.

Received: 15 September, 2020 Accepted: 20 November, 2020

Corresponding author: Maj (Dr) Deepak Sharma, Division of Periodontology, Department of Dental Surgery and Oral Health sciences, Armed Forces Medical College, Pune, Pin- 411040, India

This article may be cited as: Sharma D, Prasanth T, Kosala M, Bhandari SK, Joshi M. Management of Isolated Gingival Recession using laterally moved, coronally advanced flap: A case report. J Adv Med Dent Scie Res 2020;8(12):157-161.

INTRODUCTION

Gingival recession, a mucogingival defect is defined as the apical migration of gingival margin below cemento-enamel-junction.[1] Gingival recession has a complex etiology with multiple predisposing factors such as inadequate attached gingiva, aberrant frenum, mal-positioned teeth, osseous dehiscence and various precipitating factors which includes orthodontic tooth movement, periodontal diseases and vigorous tooth brushing.[2] The goal of root coverage is to achieve functional and aesthetic outcome. A variety of surgical modalities have been proposed for recession management. These can be broadly dived into four categories: pedicle soft tissue grafts, free soft tissue grafts, combination of free and pedicle grafts and regenerative techniques. Pedicle grafts can further be rotational flaps such as lateral pedicle flap and double papilla flaps whereas soft tissue grafts include free gingival grafts and sub-epithelial connective tissue grafts. Regenerative techniques include guided tissue regeneration.[3]

Narratives on the laterally positioned flap procedures are quite dated. Grupe & Warren in 1956 first performed a sliding flap which involved raising a full thickness flap from gingival margins of adjacent tooth to cover recession area.[4] To prevent post-surgical donor site recession Grupe (1966)[5] modified this to a sub marginal incision and Staffleno (1964)[6] advocated a partial thickness flap. Further in 1964 Corn added a cutback incision to release the tension at the base of flap. Dahlberg (1969) introduced a rotated pedicle flap which did not require a cutback incision. Knowles and Ramfjord in 1971 did a free graft to cover the donor area.[9]Ruben et al. in 1975 presented a mix thickness flap which comprised of full-thickness flap was carried out next to the recession area to cover denuded root and a split-thickness flap just lateral to

the full-thickness part, to cover the exposed bone at the donor site of the full- thickness flap.[7]

Post 1990's very few new literature data is available on the laterally positioned flap as a root coverage surgical approach. The possible reason for the lack of attention is that the previous data available does not inspire that LPF is a highly effective and predictable root coverage procedure. The stated mean percentage of root coverage ranged between 34% to 92%.[8-13]

In 2004 Zuchelli et al. proposed the 'Laterally moved, Coronally advanced flap' in which they achieved 100% root coverage with no change in gingival margin position at donor site. They proposed that adjacent donor area should have a minimum of 6mm more of keratinised tissue width than the recession width and keratinised tissue height should be at least 2mm greater than buccal PD of the adjacent tooth.[14]

The aim of the present case report was to evaluate the root coverage of a Miller class II recession defect by means of 'Laterally moved, Coronally advanced flap'.

CASE REPORT

A 32-year-old male patient reported to department of periodontology with chief complaint of unpleasant appearance of lower gums along with slight sensitivity for past 8-9 months. Past dental and medical history were nil contributory.

On clinical examination the buccal gingival margin in relation to 31 was apically placed at level of mucogingival junction, there was no interdental attachment loss, and probing depth was less than 1mm. [Fig.1] Further, there was no signs of tooth mobility and trauma from occlusion. On radiographic examination no interdental bone loss was present. [Fig. 1] The concerned tooth was located well within the alveolar housing. There was presence of adequate vestibule depth and attached gingiva lateral to the recession. [Fig. 4]

Patient was diagnosed with Miller's Class II recession[15] on 31 with recession depth of 8 mm and recession width of 3mm. [Fig. 2,3]

Treatment Plan

The patient was unwilling to undergo free gingival and connective tissue grafting because of creation of second surgical site. Coronally advanced flap was contraindicated due to lack of adequate keratinized gingiva below the recession site. Under conditions of narrow mesio-distal dimension of recession and an adequate width of keratinized gingiva present on the lower right lateral incisor [Fig. 4] (fulfilling Zuchelli et al. criteria), laterally moved coronally advanced pedicle flap as a modification of original LPF technique was planned to cover denuded roots. The procedure was explained to the patient and written consent was obtained.

In Phase I - Scaling and Root Planing was performed and patient was recalled after 4 weeks for evaluation for phase IV.

Surgical technique

The surgical site was properly isolated and was anesthetized using 2% Xylocaine HCL with adrenaline (1: 80000).

Preparation of recipient site

First an internal (reverse) bevel incision was given all along on the gingival margin of recession i.e. mesial, distal and apical margin of 31 to remove the pocket epithelium.

Second a vertical superficial incision was placed parallel and 3 mm away from the distal margin of the recession. [Fig-5] Two superficial horizontal incision were placed one at the level of CEJ and second 3 mm apical to the defect and were joined with the previous vertical incision. The above demarcated area was de-epithelized using 15c blade keeping it parallel to the gingival surface. [Fig-6]

Preparation of donor site

A horizontal submarginal incision extending mesio-distally direction 6 mm more than the width of the recession defect measured at the CEJ (3mm+ recession width+ recipient bed width). This horizontal incision was placed at 2 mm from the gingival margin keeping in mind the need to preserve at least 1mm of non-probable keratinized tissue at the adjacent donor tooth/teeth(1mm PD + 1mm Non-probable keratinized tissue = 2mm). [Fig-7]

Then an oblique vertical incision was placed from the mesial end of the initial horizontal incision extending into alveolar mucosa. From the apical end of this vertical incision, another 2-3mm long horizontal incision directed towards the recession site was placed to enable mesial mobilization of the flap.

A partial thickness flap was elevated in mix-thickness from mesial to distal i.e. thin at the papillary sites and thick at the central portion which will be covering the avascular root. Beyond mucogingival junction flap was continued split thickness to expose at least a 5mm of periosteum beyond bony dehiscence. To allow for flap's coronal advancement, all muscle insertions were carefully removed and a periosteum releasing incision was placed keeping blade parallel to external mucosa.

The prepared flap was rotated 45° laterally to the recipient site. The laterally positioned flap's margin passively reached coronal of CEJ of denuded root, and stayed there even without sutures. [Fig-8] Adequate care was taken not to give any tension on the flap. Exposed root surfaces (recession depth + pocket depth) were cautiously cureted avoiding debridement of root surfaces belonging to area of anatomic bone dehiscence so as to prevent damage to prevent healthy connective tissue fibres still implanted into the cementum.

The remaining facial soft tissue of the anatomic interdental papillae was deepithelialized. The laterally positioned, coronally advanced flap was sutured to the recipient site using 5-0 prolene suture in apico-

coronal direction. The suturing began with simple interrupted sutures at vertical incision lines, followed by a horizontal mattress suture at the fornix i.e. near the apical end, to reduce lip tension on flap's marginal portion. Finally sling suture was used to suture the flap around the denude root and over interdental connective tissue bed. At the end of procedure the final flap position was at 1.5mm above cemento-enamel junction. [Fig-9]. To protect the surgical site during initial periods of healing, periodontal pack (Coe pack) [Fig-10] was placed over tin foil for 3 days. Patient was advised chlorhexidine digluconate .12% mouthwash twice for 2 weeks.

Patient was on frequent recall. He was asked to report to the department after 07 days for Suture removal. The area was cleaned and examined thoroughly for any necrosis. It was showing satisfactory healing. Further, the patient was told to avoid tooth brushing at the surgical site for 14 days. Recall was scheduled at 30 days [Fig-11], 60 days [Fig-12] and 180 days [Fig-13].

RESULT

At 6 months, the treated teeth showed absence of bleeding on probing, probing depth of 1mm, recession depth of zero mm, a keratinised tissue gain of 7mm and excellent colour matching to adjacent area [Fig-13]. At donor site pocket depth remained shallow(1mm) and there no loss of clinical attachment and keratinised tissue. There was no post-operative recession seen in the donor tissue.

Fig1. Pre-Op

Fig 2. Pre-Op Recession width

Fig 3. Pre- OP Recession depth

Fig 4. Adequate attached gingiva at donor area

Fig 5. Recipient bed preparation

Fig 6. Donor incision- 3 mm from margin

Fig 7. Partial thickness flap dissected & rotated

Fig 8. Lateral pedicle flap sutured

Fig 9. Periodontal pack placed

Fig 10. Post op 3 months

Fig 11. Post op 6 months

DISCUSSION

Over many years several root coverage procedures such as coronary advanced flaps (CAFs), laterally positioned flaps (LPFs), free gingival grafts (FGGs), and subepithelial connective tissue have been successfully and predictably used to obtain root coverages with various degree of success based on the anatomical factors, patient factors and surgical techniques[16]. In literature coronally advancement flap along with connective tissue graft, next followed by coronally advanced flap alone are the most predictable technique for millers I and II gingival recession defects. [17,18] Because of second surgical site morbidity associated with subepithelial connective tissue grafts, the technique is unfavourable among the patients.

Lateral pedicle flap techniques have been used for quite some time for recession coverage. These LPF techniques offered advantages such as simplicity, excellent chromatic & morphological resemblance, reduced post-operative morbidity due to absence of faraway donor sites (palate).[9,10] The mean percentage of root coverage with these techniques were not comparable to coronally advancement flaps.[8-13]

In this case report with the 'Laterally moved, Coronally advanced' surgical technique we achieved 100% root coverage with excellent colour match and without losing advantages offered by previous LPF techniques. The result was in agreement with the previous study done by Zuchelli et al in 2004.[14]

The main modification in our technique was elimination of all muscle interventions, coronally advancement of flap, different thickness of flap during flap elevation i.e. thinner part of the flap was placed on the recipient bed while thicker part on the avascular root and double mattress suture at the apex to counter for the lip pull. All these modifications helped to achieved better success compared to the previous techniques.

CONCLUSION

The authors conclude that with proper case selection excellent and complete root coverage with marked aesthetic results can be achieved by performing 'Laterally moved, Coronally advanced flap' technique in isolated Miller Class I and II gingival recession. The limits of this study was it is a single case report. It is further recommended that randomised control trials with large sample size and long follow up periods, comparing this newer technique 'Laterally moved, Coronally advanced flap' with coronally advanced flap and its modifications should be carried out to further strengthen the available evidence in the literature.

REFERENCES

1. AAP's Glossary of Periodontal Terms. American Academy of Periodontology 2012.
2. Bernimoulin JP, Curilović Z. Gingival recession and tooth mobility. Journal of clinical periodontology. 1977 Jun;4(2):107-14.
3. Shkreta M, Atanasovska-Stojanovska A, Dollaku B, Belazelkoska Z. Exploring the Gingival Recession Surgical Treatment Modalities: A Literature Review. Open Access Maced J Med Sci. 2018 Apr 2;6(4):698-708. doi: 10.3889/oamjms.2018.185. PMID: 29731944; PMCID: PMC5927507.
4. Grupe HE, Warren Jr RF. Repair of gingival defects by a sliding flap operation. The Journal of Periodontology. 1956 Apr;27(2):92-5.
5. Grupe HE. Modified technique for the sliding flap operation. The Journal of Periodontology. 1966 Nov;37(6):491-5.
6. Staffileno H. Management of gingival recession and root exposure problems with periodontal disease. Dent Clin North Am 1964;3:111-120.
7. Ruben MP, Goldman HM, Janson W. Biological considerations in laterally repositioned pedicle flaps and free autogenous gingival grafts in periodontal therapy In: Stahl SS, ed. Periodontal Surgery – Biologic Basis and Technique. Springfield, IL: Charles C. Thomas; 1975:235.
8. Smukler H. Laterally positioned mucoperiosteal pedicle grafts in the treatment of denuded roots: a clinical and statistical study. Journal of periodontology. 1976 Oct;47(10):590-5.
9. Guinard EA, Caffesse RG. Treatment of localized gingival recessions. Part III. Comparison of results obtained with lateral sliding and coronally repositioned flaps. J Periodontol 1978;49:457-461.
10. Waite IM. An assessment of the postsurgical results following the combined laterally positioned flap and gingi- val graft procedure. Quintessence Int 1984;15:441-450.
11. Espinel MC, Caffesse RG. Comparison of the results obtained with the lateral positioned pedicle sliding flap revised technique and the lateral sliding flap with a free gingival graft technique in the treatment of localized gingival recession. Int J Periodontics Restorative Dent 1981; 1(6):30-37.
12. Caffesse RG, Guinard EA, Treatment of localized gingival recessions. Part IV. Results after three years. J Periodontol 1980;51:167-170.
13. Caffesse RG, Alspach SR, Morrison EC, Burget FG. Lateral sliding flaps with and without citric acid. Int J Periodontics Restorative Dent 1987;7(6):43-57.
14. Zucchelli G, Cesari C, Amore C, Montebugnoli L, De Sanctis M. Laterally moved, coronally advanced flap: A modified surgical approach for isolated recession-type

defects. Journal of Periodontology. 2004 Dec;75(12):1734-41.
15. Miller PD. Root coverage using a free soft tissue auto- graft following citric acid application. III. A successful and predictable procedure in areas of deep-wide recession. Int J Periodontics Restorative Dent 1985;5(2):15- 37.
16. Prato GP, Clauser C, Cortellini P. Periodontal plastic and mucogingival surgery. Periodontology 2000. 1995 Oct;9(1):90-105.
17. Chambrone L, Ortega MA, Sukekava F, Rotundo R, Kalemaj Z, Buti J, Prato GP. Root coverage procedures for treating localised and multiple recession-type defects. Cochrane Database of Systematic Reviews. 2018(10).
18. Roccuzzo M, Bunino M, Needleman I, Sanz M. Periodontal plastic surgery for treatment of localized gingival recessions: a systematic review. Journal of clinical periodontology. 2002 Dec;29:178-94