

Lateral Pedicle Graft: A treatment modality for root coverage in the management of localized gingival recessions

Gupta S¹, Pradhan S²

¹Resident, ²Professor and Co-ordinator, Periodontology & Oral Implantology

^{1,2}National Academy of Medical Sciences, Bir Hospital, Kathmandu, Nepal.

ABSTRACT

Gingival recession is frequently occurring in patients coming to dental clinic which could lead to pain or hypersensitivity, esthetic problem, retention of plaque hence inflamed gingiva, root caries, abrasion and fear of tooth loss. Gingival recession can be managed by surgical or non-surgical approaches. Non-surgical approaches include - restorations, crowns, veneers and gingival masks whereas surgical management includes various techniques of increasing the width of keratinized tissue such as frenectomy in case of high frenal attachment & root coverage procedures.

Lateral pedicle graft (LPG), is a technique where graft is elevated from donor site which remains attached at its base for nourishment and is transferred to adjacent site in isolated denuded root. A case of gingival recession is presented that was managed in our department using LPG technique. This technique was selected because of the advantages such as – single surgical area, preservation of blood supply of flap, the postoperative color being in harmony with surrounding tissue.

Key words : lateral pedicle graft, gingival recession, root coverage, dentine sensitivity

INTRODUCTION

Gingival recession, the apical migration of gingival margin is a mucogingival defect of multifactorial origin. It can be defined as the exposure of root surface by an apical shift in the position of gingiva¹. The various consequences are clinical crown lengthening², esthetic problem, hypersensitivity, root caries, abrasion and fear of tooth loss. The presence of gingival recessions at the anterior teeth may represent an esthetic problem for the patient who complains about the excessive length of some of his/ her teeth. This disharmony may be apparent in the patient's smile or even at a functional level (phonics, chewing). More seldom, root exposure, due to gingival recession may cause dentine hypersensitivity and consequently patient discomfort and/ or inadequate oral hygiene. The irregular outline of the gingival margin, even in absence of tooth hypersensitivity, may render plaque control

more difficult for patient even more so when gingival recession is triangular shaped with acute angles ("Stillman cleft").

A number of surgical procedures have been proposed to treat gingival recession. These can be divided into three main groups: pedicle soft tissue grafts, free soft tissue grafts and regenerative techniques³. In pedicle grafts, there are rotation flaps – laterally/horizontally repositioned flaps, double papilla flaps and oblique rotational flaps and the advanced flaps include coronally advanced flaps and semilunar flaps whereas soft tissue grafts include - connective tissue & free gingival grafts⁴⁻¹³.

Data from literature suggest^{4,6,7,14}, in patients with aesthetic request where there is adequate keratinized tissue apical or lateral to the recession defect, pedicle flap surgical techniques (coronally advanced or laterally moved flaps) are recommended (Grupe &

Correspondence: Dr. Sujayaa Gupta; e-mail: sujayaagupta@gmail.com

Case Report

Warren 1956).

The objective of this case report is to assess the success rate of managing localized gingival recessions in patients with sensitivity, esthetic concerns and/ or other complaints.

CASE REPORTS

A 45 years old female came to the Department of Dental Surgery with chief complaint of sensitivity in lower front region, bleeding and receding gums and esthetic concerns for past 6-7 months. She was referred to Periodontology and Oral Implantology Unit for the management. The patient did not give any relevant past dental history and medical history. On intraoral examination, none of the sites revealed more than 4 mm periodontal probing depth. There was Miller's Class III recession on 41 with labial frenal pull and Intra Oral Peri Apical Radiograph showed interdental bone loss (Fig 1).

Thorough Scaling and Root Planing was performed and patient was recalled after 4 weeks for evaluation. After departmental discussion and patient's consent, it was decided to surgically treat the case by lateral (horizontally) displaced flap.

Surgical Technique:

Preparation of recipient site: The surgical site was properly isolated. It was anesthetized using 2% Xylocaine hydrochloride with adrenaline (1:80000). Frenectomy was done first (Fig 2) to release the frenal pull on the flap. A 'V' shaped incision was made along the soft tissue margin of the recipient site with an internal (reverse) bevel incision on the gingival margin adjacent to the donor site (i.e. margin close to 31) and an external bevel on the opposite margin (adjacent to 42) to remove the epithelium around the denuded root surface (Fig 3). The exposed connective tissue adjacent to distal margin of 41 was to be the recipient site for laterally displaced flap taken from site of 31.

Preparation of flap: Periodontium of donor site had satisfactory width of attached gingiva and minimal loss of bone, without dehiscence or fenestration. With a #15 BP blade, vertical incision was done from gingival margin to outline a flap adjacent to the recipient site.

Incision was given to the periosteum, and extended into the oral mucosa to the level of the base of the recipient site. Horizontal incision was also given to exclude the interproximal papilla between 32 and 33. The flap was sufficiently wider than the recipient site to cover the root and provide a broad margin for attachment to the connective tissue border around the root. The flap was reflected consisting of epithelium and a thin layer of connective tissue, leaving the periosteum on the bone. A short oblique releasing incision into alveolar mucosa was made at the distal corner of flap, pointing towards recipient site (cut-back incision).

Transfer of flap: Flap was slid laterally onto the adjacent root, making sure that it adapted properly and without excess tension (Fig 4). Flap was then secured with interrupted sutures (Fig 5).

Placement of Periodontal Pack: The surgical site was covered with aluminum foil and a soft periodontal pack (Coe-Pak) extending it interdentially and onto the lingual surface to secure it (Fig 6). The patient was advised to come after 1 week for pack and suture removal.

Postoperative Instructions: The patient was prescribed Chlorhexidine digluconate mouthwash 0.2% twice daily for four weeks and advised to avoid vigorous brushing on the surgical site. A course of antibiotics – Amoxicillin 500 mg thrice daily for 5 days and Analgesics (Ibuprofen-Paracetamol combination) were prescribed thrice daily for 3 days. The patient was recalled after 1 week for follow-up but she came only after 12 days. The pack was removed, sutures removed, site irrigated with normal saline and Betadine. Patient did not complain of any discomfort and healing was found satisfactory.



Fig.1 Preoperative photograph and radiograph



Fig.2 After Frenectomy



Fig.3 Preparation of Recipient site



Fig.4 Transfer of the flap



Fig.5 Flap in position and sutures placed



Fig.6 Tin Foil and Periodontal Dressing



Fig.7 After Two Weeks



Fig.8 After Three Months

DISCUSSION

The treatment of buccal gingival recession for aesthetics or root sensitivity is a frequent demand in patients with high standards of oral hygiene¹⁵. Several root coverage procedures have been tested to move the position of the gingival margin coronally including pedicle flaps, free soft tissue grafts, combination of pedicle flaps plus grafts or barrier membranes¹⁰. The international literatures^{10, 12, 13, 16} have thoroughly documented that gingival recession can be successfully treated using several surgical procedures, irrespective of the utilized technique, provided the biologic conditions for accomplishing root coverage are satisfied: no loss of interdental soft and hard tissues height⁹. The very first lateral root coverage procedure was described by Grupe and Warren in 1956 which was called "sliding flap operation". Later on, other reports were published on gingival grafting by Bjorn (1963), King and Pennel (1964), Cowan (1965), Nabers (1966) and Haggerty (1966). Corn also (1964) advocated the use of pedicle grafts to correct mucogingival defects adjacent to edentulous area whereas Harvey et al (1965) introduced advanced flap techniques. Gargiulo & Arrocha (1967) used

Case Report

gingivectomy tissue as donor tissue and Cohen and Ross (1968) introduced double papilla repositioned flap.

Irrespective of the surgical approach, the ultimate goal of a root coverage procedure is the complete coverage of the recession defect and an optimal integration of the covering tissue with the adjacent soft tissue. Localized gingival recessions have been successfully treated with the LPG¹⁷⁻¹⁹. Improvements in clinical outcomes have been reported by sliding adjacent flap to cover root denudation. This approach is associated with a greater probability of obtaining root coverage²⁰. Patient's eventual outcome of treatment is also dependent on various prognostic factors that can be broadly divided into 3 categories: patient-related factors, tooth/ site-related factors and technique related factors²¹.

Despite various surgical treatment modalities available for isolated gingival recessions, LPG remains choice of surgery. For over 25 years lateral pedicle graft was the only surgical procedure available that could predictably produce root coverage⁹. The success of lateral or horizontally placed grafts depends on various factors. Its limitations that may contraindicate its use⁹ such as:

- An insufficient amount of gingiva available for positioning
- A shallow vestibule
- Secondary frenal attachment(s) at the donor site: and
- Multiple adjacent recessions

The selection of one surgical technique over another depends on several factors, some of which are related to the defect (the size of the recession defect, the presence or absence of keratinized tissue adjacent to the defect, the width and height of the interdental soft tissue, the depth of the vestibulum or the presence of frenuli) while others are related to the patient²².

This technique was utilized because in this surgical approach, the soft tissue utilized to cover root exposure is similar to that originally present at the buccal aspect of the tooth with the recession defect and thus the esthetic result

is satisfactory and as various literature^{4,6,7,9,10,14,16,19} suggest that the use of LPG to cover the graft improves the root coverage predictability & esthetic result. Coverage of exposed root surface with sliding flap technique is reported to be 60% (Gargiulo & Arrocha 1967), 61% and 72% (Rateitschak et al 1985) though inconsistent result. In donor site there is uneventful repair and restoration of gingival health and contours with some loss of radicular bone (0.5mm) and recession (1.5mm) reported with full thickness. It is also less invasive procedure with easy oral hygiene maintenances, addresses chief complaint of patient with less future disadvantages.

The results of our cases demonstrate that proposed approach of lateral pedicle graft for root coverage is very effective procedure for treatment of isolated gingival recessions in patients with esthetic demands as it resulted in optimum soft tissue root coverage in 2 weeks and 3 months follow up.

CONCLUSION

The loss of gingiva in anterior region can often lead to esthetic and functional challenge for clinician and patient. It is important to provide optimum functional and aesthetic solution for the missing gingival tissue and simultaneously to preserve periodontal health. Marked esthetic and functional results can be obtained with lateral pedicle grafts for replacing lost tissue where a large amount of tissue is missing.

REFERENCES

1. Carranza FA, Newman MG, Glickman I. Clinical Periodontology. 8th ed. Philadelphia: Saunders; 1996.
2. Zucchelli G, Amore C, Sforza NM, Montebugnoli L, De Sanctis M. Bilaminar techniques for the treatment of recession-type defects. A comparative clinical study. J Clin Periodontol. 2003;30(10):862-70.
3. 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(9):848-54.

Case Report

4. Grupe HE. Modified technique for the sliding flap operation. *J Periodontol.* 1966;37(6):491-5.
5. Coletton SH. Mucogingival surgical procedures employed in re-establishing the integrity of the gingival unit (II): The lateral sliding flap; edentulous area pedicle graft; and the double papillae flap. *Quintessence Int Dent Dig.* 1977;8(6):57-63.
6. Valletta G, Matarasso S, Gagliardi G. Lateral sliding flaps in mucogingival surgery. *Minerva Stomatol.* 1978;27(4):231-44.
7. Caffesse RG, Guinard EA. Treatment of localized gingival recessions. Part IV. Results after three years. *J Periodontol.* 1980;51(3):167-70.
8. Lindeberg RW. Combined management of mucogingival defects with citric acid root conditioning, lateral pedicle grafts, and free gingival grafts. *Compend Contin Educ Dent.* 1985;6(4):265-6, 8, 70-2.
9. Miller PD, Jr. Root coverage grafting for regeneration and aesthetics. *Periodontol 2000.* 1993;1:118-27.
10. Prato GP, Clauser C, Cortellini P. Periodontal plastic and mucogingival surgery. *Periodontol 2000.* 1995;9:90-105.
11. Wennstrom JL. Mucogingival therapy. *Ann Periodontol.* 1996;1(1):671-701.
12. Dym H, Tagliareni JM. Surgical management of cosmetic mucogingival defects. *Dent Clin North Am.* 2012;56(1):267-79, xi.
13. De Sanctis M, Clementini M. Flap approaches in plastic periodontal and implant surgery: critical elements in design and execution. *J Clin Periodontol.* 2014;41 Suppl 15:S108-22.
14. Caffesse RG, Kon S, Castelli WA, Nasjleti CE. Revascularization following the lateral sliding flap procedure. *J Periodontol.* 1984;55(6):352-8.
15. Consensus report. Mucogingival therapy. *Ann Periodontol.* 1996;1(1):702-6.
16. Wennstrom JL, Zucchelli G. Increased gingival dimensions. A significant factor for successful outcome of root coverage procedures? A 2-year prospective clinical study. *J Clin Periodontol.* 1996;23(8):770-7.
17. Garber DA, Salama MA. The aesthetic smile: diagnosis and treatment. *Periodontol 2000.* 1996;11:18-28.
18. Ozturan S, Durukan SA, Ozcelik O, Seydaoglu G, Haytac MC. Coronally advanced flap adjunct with low intensity laser therapy: a randomized controlled clinical pilot study. *J Clin Periodontol.* 2011;38(11):1055-62.
19. Zuhr O, Baumer D, Hurzeler M. The addition of soft tissue replacement grafts in plastic periodontal and implant surgery: critical elements in design and execution. *J Clin Periodontol.* 2014;41 Suppl 15:S123-42.
20. Pini-Prato GP, Cairo F, Nieri M, Franceschi D, Rotundo R, Cortellini P. Coronally advanced flap versus connective tissue graft in the treatment of multiple gingival recessions: a split-mouth study with a 5-year follow-up. *J Clin Periodontol.* 2010;37(7):644-50.
21. Cortellini P, Pini Prato G. Coronally advanced flap and combination therapy for root coverage. Clinical strategies based on scientific evidence and clinical experience. *Periodontol 2000.* 2012;59(1):158-84.
22. Zucchelli G, De Sanctis M. Modified two-stage procedures for the treatment of gingival recession. *Eur J Esthet Dent.* 2013;8(1):24-42.