

Lateral Pedicle Graft: A treatment modality for root coverage of localized gingival recession: A case report

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Abstract- Gingival recession has been defined as the apical shift of gingival margin from its physiologic level (1 to 2 mm coronal to cemento-enamel junction) causing pathologic exposure of root surfaces. Mucogingival esthetic surgery is all about treatment of mucogingival esthetic alterations. Mucogingival problems may be caused by gingival recession often in association with non-carious cervical lesion or by root caries or by altered passive eruption. Gingival recession can be treated by surgical or non-surgical means. Nonsurgical means include - restorations, crowns, veneers and gingival masks whereas surgical approaches includes various methods of increasing the width of keratinized tissue such as frenectomy in case of high frenal attachment & root coverage procedures.

The lateral displaced pedicle flap was first described by Grupe and Warren in 1956. It was used to cover the isolated, denuded root surfaces that have adequate amount of donor tissue adjacent to the recipient site. The vestibular depth must be adequate to laterally slide the pedicle. A case of gingival recession is presented that was managed using LPG technique. This technique was selected because of certain advantages – single surgical area, preservation of blood supply of flap, the postoperative color being in harmony with surrounding tissue.

Index Terms- Lateral pedicle, Graft, Gingival recession.

I. INTRODUCTION

Indications for attempting a root coverage procedures are esthetic/cosmetic demands and root hypersensitivity.^{1,2} Also, a common indication for doing a root coverage procedure includes changing the topography of the marginal soft tissue in order to facilitate plaque control. Few of the major factors that further leads to receding gums are caused by tooth brushing and plaque-induced periodontal inflammation. The control of these factors will further prevent the progression of the recession in many cases. This can be concluded by adding the fact that patients should be motivated to carry out the effective measures but at the same time non-traumatic plaque control measures where the oral examinations reveal regions with a thin covering of soft tissue, with or without recession.

Several techniques are used for gingival augmentation coronal to recession (i.e., root coverage):

1. Free gingival autograft
2. Free connective tissue autograft
3. Pedicle autografts
 - Laterally (horizontally) positioned pedicle flap
 - Coronally positioned flap; includes semilunar pedicle (i.e., Tarnow method)
4. Subepithelial connective tissue graft (i.e., Langer method)
5. Guided tissue regeneration (GTR)
6. Pouch and tunnel technique (i.e., coronally advanced tunnel technique)

Few of the techniques that are used for widening the attached gingiva apically to the area of the recession are used for attempting root coverage.

In 1956, Grupe and Warren³ initially described the displaced pedicle flap technique that remained standard technique for several years and is still indicated in some cases. The laterally (horizontally) positioned flap can be used to cover the isolated, denuded root surface that have adequate donor tissue in contiguous to the recipient site. The vestibular depth must exist to laterally move the pedicle. Grupe (1966) modified his technique to a sub marginal incision at the donor site Staff leno (1964) tried solving this problem by using a partial-thickness flap and simultaneously protect the donor site from further receding. Corn (1964) again modified this by adding a cutback incision to release tension. Dahlberg (1969) used engineering principles with the rotated pedicle flap, that did not require a cutback incision. Goldman and Smukler (1978) added the periosteally stimulated flap and a partial-full rotated flap in 1983 which allowed a full-thickness flap to cover the root surface and a partial-thickness flap to cover the bare bone.⁴

Case Report

A 22 year old female patient reported to the Department of Periodontics at I.T.S Dental College, Greater Noida; with a chief complaint of receding gums and mild hypersensitivity in relation to lower mandibular central incisors. On intra oral examination, the mandibular central incisors showed marginal tissue recession with attachment loss of 4mm (Fig-1, Fig-2) on facial surface is

seen without loss of interdental papilla. The recession is covered with band of supra gingival calculus. Patient developed mild sensitivity 2 months because of the gingival recession. Marginal gingiva showed mild signs of inflammation.

On extra oral examination there were no palpable lymph-nodes, face is bilaterally symmetrical and lips were competent. According to Miller's classification the present defect is classified as Class-II gingival tissue recession 31-41 and no Trauma from occlusion was present (Fig-1, Fig-2)

Surgical Technique

Step 1: Preparation of Recipient Site

The overlying epithelium is removed around the denuded root surface. The connective tissues are then exposed of the recipient site for the laterally displaced flap. The root surface is then thoroughly scaled and root planed.

Step 2: Preparing the flap

The periodontal tissue present at the donor site should have adequate width of attached gingiva with no fenestration or dehiscence in the bone. A full-thickness or partial thickness flap may be raised, but the latter is more preferred because of the advantage of speedy recovery at the donor site and moreover it reduces the risk of loss of facial bone.

This is especially important if the bone is thin or a dehiscence is observed.

- With a #15 blade, vertical incisions are made from the gingival margin to outline the flap of the recipient site. Incisions are made to the periosteum, and are extended into the oral mucosa at the level of the base of the recipient site. The flap should always be adequately wider than the base of the recipient site to cover the root and provide with an adequate margin for the attachment of connective tissue around the root. The interdental papilla at the distal end of the flap or a major portion of it should be included to always secure the flap in the interproximal space between the donor and the recipient teeth (Fig-4).

- Vertical incisions are made along the gingival margin and the interdental papilla, then the flaps are separated along with epithelium and a thin layer of connective tissue, leaving the periosteum on the bone (Fig-4)
- A vertical releasing incision along the gingival margin might be needed so that tension is avoided at the base of the flap, that can impair the blood supply when the flap is moved. A short, oblique incision is made into the alveolar mucosa at the distal corner of the flap (Fig-5).

Step 3: Transfer the flap

Sliding the flap laterally onto the adjacent root. The flap should be placed firm and flat without additional tension on the base. Stabilize the flap onto the adjacent gingiva and the alveolar mucosa with simple interrupted sutures. An additional suture may be used around the involved tooth to prevent the flap from further sliding in apical direction (Fig-5).

Step 4: Protecting the flap and donor site

Covering the surgical site with an aluminium foil and periodontal dressing. Extending the dressing onto the facial and lingual surfaces to secure the flap. The dressing and sutures are usually removed after 1 week (Fig-6).

POST-OPERATIVE INSTRUCTIONS

To prevent further complications, patient is prescribed with antibiotics Amoxicillin 500mg thrice daily for 5 days along with Analgesics (ibuprofen) prescribed for 3 days to be taken thrice daily and 0.2% Chlorhexidine Di-Gluconate mouth prescribed thrice daily for four weeks. The patient was recalled for follow-up after 1 week. The pack and sutures were removed and the site was thoroughly irrigated with normal saline and Betadine. Recall was scheduled after 3 months. The recession results showed coverage results to adjacent gingiva.

Thus, patient satisfaction was perceived.



Fig 1: Recession depth



Fig 2: Recession width



Fig 3: Width of attached gingiva



Fig 4: Incision line



Fig 5: Displacement of the flap



Fig 6: Placement of periodontal dressing



Post-operative picture after 3 months

The case report presented lateral pedicle graft technique for the treatment of isolated or single tooth marginal tissue recession. Over years, several techniques are used to achieve root coverage and the advantage of doing this technique over other root coverage procedures is morphologic as well as colour resemblance and presence of single surgical site. Few of the disadvantages include recession, dehiscence/fenestration at donor site and it is limited to only one or two teeth. Indications for lateral pedicle flap are adequate length, width and thickness of keratinized tissue, recession in 1-2 teeth, sufficient vestibular depth. Contraindication is inadequate width length and thickness of keratinized tissue, presence of fenestration or dehiscence at the donor site, deep periodontal pockets, and loss of interdental bone. This technique was introduced by many authors Mc Fall 1967⁷, Smukler 1976⁶ and the success rate of the root coverage procedure is in the range of 68% -72%. Many causes of failures to cover the denuded root surface can be tension at the base of the flap to cover might lead to exposure of bone that lead to bone loss and poor stabilization & mobility of the graft. Similar studies were done by Parul⁸ results showed adequate amount of root coverage of Millers class II recession with LPG in the lower anterior teeth. Similarly Chopra DK et al. did LPG in mandibular anterior area for the treatment of class-III gingival recession and esthetic root coverage was also seen without any change in the position of gingiva at the donor site⁹. Kritika et al in 2018 performed a similar case to cover denuded root surface using the same technique with sub-marginal incision and obtained predictable results¹⁰.

II. CONCLUSION

The treatment options considered for the treatment of denuded root surfaces include pedicle graft, free gingival autografts. The predictable outcome of treatment in case of single tooth or isolated gingival recession is excellent and complete coverage can be expected for Miller's Class-I and Class-II conditions using lateral pedicle grafts and also colour matching with the adjacent tissues is also considered to be excellent without another surgical intervention like in free gingival autografts.

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