

Gingival recession coverage by lateral pedicle graft procedure: Case report

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Abstract: *The coverage of denuded roots represents one of the challenges of periodontal treatment as clinician is not only required to treat disease and improve function but also cope with ever demanding esthetics of patients. Among the several techniques for recession coverage is the laterally positioned flap. The main advantages of the laterally positioned pedicle graft are that it is relatively easy and not time-consuming, it produces excellent esthetic results and no second surgical site is involved for donor harvesting. This article puts an emphasis on case report in which lateral pedicle graft technique has been used for root coverage of right mandibular central incisor*

Keywords: *root coverage, gingival recession, lateral pedicle flap, gingival graft*

Introduction:

Gingival recession is the displacement of marginal gingival tissue apical to the cemento-enamel junction with exposure of root surface to the oral environment¹. The gingival recession is found most commonly on facial and buccal surface as a result of vigorous tooth brushing, whereas it may affect other tooth surfaces also because of poor oral hygiene². It has been proposed that recession is multi-factorial, with one type being associated with anatomic factors such as bone dehiscence, malpositioning of teeth, trauma associated with malocclusion. Another type of recession is associated with physiological (aging) or pathological factors (where it occurs as part of pathogenesis of periodontal disease or smoking)²⁻⁴. The term periodontal plastic surgery(PPS), first suggested by Miller (1988), is performed to

prevent or correct anatomical, developmental, traumatic or plaque disease-induced defects of gingival, alveolar mucosa or bone(American academy of Periodontology 1996)⁵ . One of the most frequent indications of PPS is the treatment of buccal gingival recessions. A variety of periodontal plastic surgeries have been suggested for root coverage. These surgical procedures can be classified as pedicle soft tissue grafts, free soft tissue grafts or a combination of both. The pedicle graft was the first periodontal plastic surgery procedure proposed in 1956 for root coverage by Grupe and Warren⁶ as a laterally repositioned full thickness flap. Pedicle grafts are based on the simple concept of moving donor tissue laterally to cover an adjacent defect. It provides sufficient esthetic result. At first it was described as the "lateral sliding flap." The procedure was then modified and named as the laterally positioned flap. The "oblique rotational flap", the "rotation flap", and the "transpositioned flap" are modifications in incision design. When the lateral movement is both mesial and distal to the defect, the flap is called a double papilla flap.

Case report:

A 19 years old male patient reported to department with chief complaint of an elongated tooth” in the front region of lower jaw. Patient also had mild sensitivity to cold in relation to mentioned tooth. Patient had a non-contributory medical history. Intraoral clinical examination revealed a Miller’s localized Grade 2 gingival recession (Figure 1) in relation to lower right mandibular central incisor. There was an adequate attached gingiva (4 mm) present in relation to tooth 42. Adequate vestibular depth was observed in mandibular labial vestibule. Intra-operative periapical radiograph revealed no interdental bone loss in 41, 42 region. Trauma from occlusion and tooth malposition in respect to the involved tooth was ruled out clinically.

Pre Surgical Phase

Patient was motivated and educated and oral hygiene instructions were given. Scaling and root planing was done and the patient was periodically recalled to assess his oral hygiene and gingival status before periodontal surgery and allowing the creeping attachment for 3-4weeks. Blood and radiographic investigation was carried out. No interproximal bone loss was seen. **Surgical phase**

The root surface was thoroughly scaled and planned to remove plaque and surface irregularities. Under local anesthesia, 15 no scalpel blade was used to prepare the recipient

bed. The epithelium was dissected preserving the connective tissue for the graft acceptance in the coronal-apical direction several millimeters below the mucogingival junction. The frenum attachment was relieved thereafter.

Preparation of Donor Site

The donor flap should be at least one and the half times the size of the recipient area to be covered to avoid the shrinkage later on. The root coverage over right central incisor was covered by pedicle graft from lateral incisor by giving incision around the lateral incisor such that interdental papilla was preserved and partial thickness flap was taken to cover the denuded root, removing the adjacent epithelium and partial connective tissue in order to preserve the periosteal bed over the donor site. The vertical incisions are extended far apically into the mucosal tissue to permit adequate mobility of the flap. The base of the flap must be wide to permit adequate vascularity. The flap was sharply dissected, giving the acute angled incisions at the base of interdental gingiva over both the sides and collar of marginal gingival was relieved.

Preparation of Pedicle Flap

A partial thickness pedicle was raised using sharp dissection, the flap should be free enough to permit movement to the recipient site, with no tension. The pedicle flap was rotated and positioned coronally 1 to 2mm on the enamel of the recipient site. Suturing was done using 4-0 silk suture. papillary and periosteal sutures were given on both the sides to stabilize the pedicle flap with interproximal papilla. The flap lied passively with no tension and was pink. Pressure was applied to the flap with gauze sponge for three to four minutes to create fibrinous union. **(FIGURE 2)**



FIGURE 1



FIGURE 2



FIGURE 3

Post Operative Instructions

Patient was instructed to take analgesics and antibiotics and was asked to discontinue the tooth brushing around the surgical site during the initial 15 days after surgery. During this period plaque control was achieved with a 0.2% chlorhexidine mouth rinse used twice a day. After this period, gentle tooth brushing with modified stillman technique using a soft bristle tooth brush was allowed. After 15 days, recession coverage was observed (FIGURE 3)

Discussion:

Gingival recession may represent problems to the patient because of poor aesthetics, pain, root sensitivity, root caries, root abrasion, plaque retention and fear of tooth loss.⁷ Several

surgical techniques are described to manage gingival recession defects including root coverage techniques, increasing the keratinized tissue, frenectomy, with varied reported clinical effectiveness.

Root coverage has become an important treatment modality because of increasing cosmetic and functional treatment. In the present case, patient was concerned about unpleasant aesthetics due to gingival recession of front tooth. Success of root coverage procedures depends on several factors like elimination and control of etiology, interproximal bone level, and the choice of best coverage procedure based on the clinical situation.⁸ In the present case, we chose Lateral pedicle graft technique described by Staffelino because of the good periodontal condition of the neighboring tooth with adequate keratinized gingival and normal bone height.⁹

Laterally positioned pedicle graft, a technique which was introduced by Grupe and Warren in 1956, represents one of the first in the series of procedures of mucogingival surgery designed to cover exposed root surfaces. In 1966, Grupe modified the lateral pedicle technique using submarginal incision at the donor site so that no denuded osseous surfaces would be created.¹⁰ This technique was evaluated by many investigators (McFall, 1967¹¹, Smukler, 1976¹²), and the success of this root coverage procedure was found to be in the range of 69% to 72%. Other modifications of lateral pedicle grafts are given by Staffelino in 1964 who did split thickness flap to minimize recession at donor site, Corn in 1964 did a cutback incision at the base of the flap and Knowles and Ramfjord in 1971 did a free graft to cover the donor area.¹³ Indications for lateral pedicle grafts are sufficient width, length, thickness of keratinized tissue, coverage limited to 1-2 teeth, sufficient depth of vestibule and narrow mesio-distal dimension of recession. Contraindications are insufficient width, length, thickness of keratinized tissue, presence of fenestration or dehiscence at donor site, extremely protrusive teeth, deep PDL pockets, loss of interdental bone and narrow oral vestibule. The advantage of lateral pedicle graft is its simplicity, presence of only one surgical site and good vascularity of pedicle. Whereas its disadvantages are that the amount of keratinized attached gingiva that is the prerequisite, probable recession at donor site, dehiscence or fenestration at donor and its limitation to only 1-2 teeth. Often times there might be cases of failure to cover the denuded surface and the reasons for that could be attributed to tension at base of distal incision, too narrow pedicle, full thickness flap to cover might lead to exposure of bone which leads to bone loss and poor stabilization & mobility of the graft.

Conclusion:

In the present case report, a laterally positioned flap with submarginal incision was used to cover Millers recession defects. This technique has been demonstrated to be a reliable and predictable treatment modality for obtaining root coverage in recession defects for complete or partial root coverage. However careful case selection and surgical management is critical if a successful outcome is to be achieved.

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