A Little of Lateral Thinking! The Lateral Pedicle Flap

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ABSTRACT

Denuded root surface or gingival recession is a very common clinical condition which among other problems, brings about esthetic discomfort, sensitivity, etc. Several techniques have been proposed to cover the denuded root looking for satisfactory outcomes both esthetically and functionally. The laterally positioned flap (LPF) is a pedicle graft technique that, despite of some limitations and a few indications, may achieve good outcomes in some cases. This case report highlights the use of the laterally positioned pedicle flap technique along with tetracycline hydrochloride as a root surface biomodification agent, in the management of localized gingival recession defect. Postoperatively, the clinical condition was stable with significant root coverage and satisfactory healing of the gingival tissues with no signs of inflammation.

Keywords: Denuded root, Gingival recession, Laterally displaced flap, Root coverage.


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It is well-documented that gingival recession can be successfully treated by means of various surgical approaches. If the biologic conditions for accomplishing root coverage are satisfied like no loss of interdental soft and hard tissues height and other anatomic variations, proper root coverage can be achieved irrespective of the technique utilized.1 The surgical technique for the procedure to be selected depends upon the local anatomic characteristics of the site to be treated and on the patient’s demands. The selection of the surgical technique is influenced by the patient especially when concerned about an esthetic problem due to the exposure of root surfaces during smiling or function.2 Various surgical techniques have been proposed for coverage of exposed root surfaces with different indications and limitations.3

The main indications to various mucogingival procedures for root protection are: Increase in the width of keratinized tissue,4 root coverage,5 correction of edentulous ridges,6 peri-implant correction,5 biological dressing,6 aid to maxillofacial surgery,7 adjunctive frenulectomy8 and prevent gingival recessions in orthodontic movements.9 For the development of a marginal tissue recession, alveolar bone dehiscence is considered a prerequisite.9

For treating an area of isolated gingival recession, Grupe and Warren10 introduced the laterally positioned flap (LPF), which is one of the most predictable methods. Success of the technique depends on the surgical design and presence of adequate width of attached gingiva adjacent to the recession site. It is most predictable on teeth with localized labial recession.11 The results are more satisfactory as the soft tissue utilized to cover the root exposure is similar to that originally present at the buccal aspect of the tooth with the recession defect. Also as the second surgical site is not involved (as in case of free gingival graft or connective tissue graft), the postoperative course is less troublesome.2

Several modifications have been suggested to the original LPF technique of Grupe and Warren in 195610 with the prime objective to reduce the risk of gingival recession at the donor site. Instead of a full-thickness flap, a partial thickness flap was proposed by Staffileno.11 Grupe and Warren10 suggested performing a submarginal incision at the donor site in order to preserve the marginal integrity of the tooth adjacent to the recession defect. A full-thickness flap performed close to the recession defect to cover exposed root, and a split-thickness flap laterally to the full-thickness one, was introduced by Rubens et al13 with the objective to cover the bone exposed at the donor site of the full-thickness flap.

Reports on the laterally moved flap surgical technique are quite dated.2,11-15 Using LPF Caffesse and Guinard16 found 69% coverage after 1 month, which did not recede after 3 years. For the predictable results, the importance of proper case selection was told by McFall17 who reported a success in 25 out of 27 cases. For the long-term stabilization of root coverage procedures, elimination of the etiologic factors, such as vigorous tooth brushing technique, local irritants, such as calculus, improperly adapted restorations and also adoption of a strict and proper plaque control method is a must.18 This objective
of this case report was to describe a case where root coverage was achieved with a LPF and tetracycline hydrochloride was used as a root biomodification agent.

CASE REPORT

A 35-year-old male patient, with good general health, searched for assistance complaining of esthetic dissatisfaction in his lower anterior tooth region. The periodontal examination revealed Miller’s class II recession in relation to 41 (Figs 1 and 2). There was probing depth of 2.0 mm and radiographic examination showed no bone loss interdentally. Patient’s medical and dental histories were noncontributory. Four weeks before surgery full-mouth scaling and polishing were performed and oral hygiene instructions were given to eliminate habits related to the etiology of the recession.

Re-evaluation of the tooth (41) at 4 weeks showed apicocoronary 6.5 mm of recession (Fig. 1), mesiodistally 3 mm of recession (Fig. 2). Accordingly after the patient’s consent, it was decided to treat the site by lateral pedicle flap to achieve root coverage.

SURGICAL PROCEDURE

Preparation of Recipient Bed

The patient was asked to rinse with 10 ml of 0.12% chlorhexidine for 30 seconds, following which local anesthesia was administered. After adequate, local anesthesia had been achieved, the exposed root was planed thoroughly to reduce the convexity. Root conditioning was achieved by burnishing the root using a cotton pellet saturated with tetracycline hydrochloride solution for about 3 minutes. A no. 15 scalpel was used to make a “V” shaped incision about the denuded root, removing adjacent epithelium and connective tissue (Fig. 3).

Preparation of Donor Site

A partial-thickness flap is begun with a scalloped inverse beveled incision at the gingival crest using a no. 15 scalpel blade. The donor flap should be one and a half times the size of the recipient area to be covered and 3 to 4 times longer than wider (Fig. 4). The incision extends from ‘V’ shaped incision to the vertical incision. This incision is not made down to the bone. The horizontal incision is stopped at the mucogingival junction. All of the interproximal papillae are partially dissected, thinned and maintained.

A vertical incision is now made with a no. 15 scalpel blade at the donor site but is not made down to the bone. It is extended far enough apically to ensure adequate mobility of the flap (Fig. 5). The base of the flap is kept wide to permit adequate vascularity. The flap should be free enough to permit movement to the recipient site, with no tension. The recipient site was covered with the pedicle flap and sutured by means of sling sutures (5-0 vicryl sutures) (Fig. 6). After suturing, a periodontal dressing was placed to protect the surgical site (Fig. 7).

Postoperative Instructions

The patient was asked to refrain from tooth brushing at the surgical site for 2 weeks. A 0.12% chlorhexidine mouth rinsing was advised twice daily for 3 weeks and for postoperative pain control, combiflam was prescribed, twice daily for 3 days. The periodontal dressing was removed 2 weeks postoperatively. Healing was uneventful and was completed in about 6 weeks. There was significant reduction in the recession size (Figs 8 and 9).

DISCUSSION

In the present case, the patient had a Millers class II recession in the tooth no. 41. Laterally positioned flap
procedure performed in this case provide several advantages to the recession site, such as esthetic improvement in the region, greater protection against root abrasion, reduction of dentin hypersensitivity as reported by the patient and also absence of the second surgical site or the donor site. Only classes I and II recessions have predictability of covering 100% of the root by means of surgical techniques. Class III recessions have predictability of partial coverage and class IV has no predictability for covering. The ultimate clinical goal of any surgical root coverage procedure is complete root coverage along with the esthetic correction, resolution of
hypotheses and prevention of root abrasion. For the treatment of localized gingival recession defects, LPF or root surface biomodification yields higher percentages of complete root coverage. The results of the present case report indicate that the use of LPF, along with tetracycline hydrochloride, yielded significant root coverage. Laterally positioned flap involves repositioning of donor tissue from an area adjacent to the recession defect to cover the exposed root surface. Using a modified LPF technique in the management of Miller class I gingival recession defects, 95.5% mean root coverage and 83.4% complete root coverage was achieved in a recent randomized controlled clinical study. Furthermore, another clinical study has revealed a statistically significant increase in the width of keratinized tissue (the distance between the gingival margin and the mucogingival junction) with the LPF compared to the CAF technique.

The percentage of root coverage outcome can be improved with root surface biomodification agents. These agents are used in an attempt to remove the smear layer and also the bacterial endotoxins, to widen the orifices of dentinal tubules, and for the exposure of the dentinal collagen matrix. This dentinal collagen matrix is thought to provide a substrate that supports the chemotaxis, migration, and attachment of fibroblasts that are fundamental to successful periodontal wound healing. Tetracycline hydrochloride was used as a root conditioning agent in the present case.

CONCLUSION

Within limits of the present case report, it may be concluded that LPF technique along with tetracycline hydrochloride not only provides a biocompatible surface, but also improves the tenacious connective tissue attachment of the flap to the root surface and, as a consequence, enhances the clinical outcome in the form of significant coverage of the denuded root.

REFERENCES