Case Study

Root coverage by lateral pedicle graft: A case report

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Abstract

Gingival recession is the most common mucogingival deformity and should be treated at its earliest detection. Exposed root surfaces are more likely to develop root sensitivity and root caries and pose esthetic problems. Among various procedures, laterally positioned pedicle graft (LPG) is widely used successfully to cover Miller class-I and Class-II recession defects. The main advantages of the laterally positioned pedicle graft are that it is relatively easy and less time-consuming. It produces excellent esthetic results and no second surgical site is involved for donor harvesting. Thus the present study was undertaken to understand the efficacy of lateral pedicle grafts in Miller’s class I gingival recession defects.

Keywords: gingival recession, laterally positioned pedicle graft, mucogingival surgery, root coverage.

Introduction

Gingival recession is defined as the displacement of the gingival margin apical to the cementoenamel junction. It indicates the loss of periodontal connective tissue fibers along with root cementum and alveolar bone. The most common and significant factors causing gingival recession are considered to be periodontal disease and improper oral hygiene measures; along with some predisposing factors such as thin gingiva, a prominent root surface, bony dehiscences, abnormal tooth position, abnormal frenal pull, mechanical trauma caused by tooth brushing, and iatrogenic factors such as faulty restorations/prosthesis or uncontrolled orthodontic movement of teeth [1].

The term periodontal plastic surgery (PPS) was defined as surgical procedures performed to prevent or correct anatomical, developmental, traumatic or plaque disease-induced defects of the gingiva, alveolar mucosa, or bone (The American Academy of Periodontology 1996) [2].

One of the most frequent indications of PPS is the treatment of buccal gingival recessions. This treatment has mainly been justified by the patient’s wish to improve the aesthetic appearance when there is an exposed root. Occasionally, there is an indication for surgical treatment when the exposed root is associated with dental hypersensitivity and/or root caries. Moreover, these defects should also be treated in situations where there is an unfavorable contour of the gingival margin that limits proper plaque control and fails to respond to adequate oral hygiene measures. 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. 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” [1].
The "oblique rotational flap", the "rotation flap", and the "transpositioned flap" are modifications in incision design [2]. When the lateral movement is both mesial and distal to the defect, the flap is called a double papilla flap. The pedicle graft was the first periodontal plastic surgery procedure proposed in 1956 for root coverage by Grupe and Warren as a laterally repositioned full thickness flap [3].

Several techniques have been proposed for the treatment of isolated gingival recession defects. The main treatment goals are to achieve complete root coverage and increasing keratinized tissue width. Some of the pedicle soft tissue grafts like lateral pedicle graft, double papilla flap and oblique rotational flap, advanced flaps like coronally advanced flap and semilunar flap have shown successful root coverage. Coronally advanced flap combined with additive treatments like non resorbable barrier, resorbable barrier, enamel matrix derivative, platelet rich plasma, acellular dermal matrix, growth factors, tissue engineering and low intensity laser therapy have also shown predictable root coverage [4].

Case Report

A 27 year female patient, with isolated Miller's classes I gingival recession in 31 reported to the Department of Periodontics, complaining of downward movement of the gingiva. Intra oral examination revealed the presence of 5 mm of gingival recession. Based upon clinical findings lateral positioned pedicle graft was planned (Figure 1).

After local anesthesia (2% lignocaine hydrochloride with 1:80,000 epinephrine), a V shaped incision was made in the gingival recession area making a wide external bevel incision on mesial aspect and an internal bevel on distal aspect. Then the V shaped gingiva was removed and beveled for flap adaptation (Figure 2). The adjacent partial thickness pedicle flap was reflected from the donor area, leaving about 1 mm of marginal gingiva intact, the width of which was more than 1½ times the area of gingival recession (Figure 3, 4). The pedicle flap was then covered over the recipient site and finger pressure was applied with a gauze piece until the graft was firmly seated. It was then carefully secured with 3-0 non- resorbable sling sutures without tension (Figure 5). Cut- back incision was given if it precluded stable positioning of the flap to the recipient site. Good adaptation of the flap to the underlying tissues is essential for adequate diffusion. Periodontal dressing was given thereafter (Figure 6).

The patient was discharged with postoperative instructions and Non- steriodal anti-inflammatory drugs as medications for 3 days to avoid postoperative pain and to reduce inflammation. The patient was recalled after 7 days. The periodontal dressing along with sutures were removed and thoroughly irrigated with normal saline. The surgical site was examined for uneventful healing. The defect created at the donor site healed by secondary intention. The patient was instructed to use soft toothbrush for mechanical plaque control in surgical area. Again measurements were taken from the marginal gingival towards the cemento-enamel junction. Oral hygiene instructions were re-instructed. The patient was monitored regularly postoperatively, to ensure good oral hygiene in the surgical area. Re-evaluation was done at 1 month follow up, during which the site was re-examined for the recession height (Figure 7).
Discussion

Denise Gomes da Silva et al (2007) conducted a study to evaluate the efficacy of the coronally positioned flap procedure for the treatment of Miller's Class I defects. The study consisted of treatment of 31 sites in 28 subjects. They reported 98% mean root coverage, with complete root coverage in 84% of the defects [5].

De Santis M (2004) did a study to evaluate the Mean Root Coverage using coronally advanced flap with and without acellular dermal matrix. The results of the study at 6 months showed comparatively more root coverage in the group using acellular dermal Matrix with coronally advanced flap (76%) as compared to coronally placed flap alone (71%) [6].

Leknes et al (2000) conducted a study evaluating mean root coverage using coronally advanced flap in one group and guided tissue regeneration membrane in the second group. Both the procedures achieved root coverage to a certain extent. More root coverage was achieved using coronally advanced flap as compared to the GTR membrane group [7].

Khalid et al (2015) stated that a pedicle flap of gingiva can be raised from an edentulous ridge, adjacent teeth, or from existing gingiva on the tooth and moved laterally or coronally to replace alveolar mucosa as marginal tissues. The procedure can be used to cover an exposed root or to eliminate a gingival defect if the root is not too prominent in the arch. It was originally described as a “sliding flap” or lateral pedicle flap (LPF) that started as full thickness then became split thickness at the mucogingival junction. The LPF has been primarily indicated for isolated recession defects on mandibular or maxillary teeth. Investigations of the LPF technique show a mean defect coverage ranging from 61% to 74% with a mean for all studies of 67% [8]. Smukler, 1976, [9] investigated the success of this root coverage procedure was found to be in the range of 69% to 72%.

In another study conducted by Harris et al (1997) for root coverage with guided tissue regeneration the short-term results (6 months) had mean root coverage of 92.3% and 58.8% on long-term evaluation (25.3 months). Contraindications are insufficient width, length, thickness of keratinized tissue, presence of fenestration or dehiscence at donor site, extremely protrusive teeth, deep periodontal pockets, loss of interdental bone and narrow oral vestibule [10].

The advantages of lateral pedicle flap are 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 pre requisite, probable recession at donor site, dehiscence or fenestration at donor and limitation to only 1 or 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. Moreover, full thickness flap to cover might lead to exposure of bone which leads to bone loss and poor stabilization and mobility of the graft. In the present case, there were no such complications at the follow up of 2 weeks, 1 month and 2 months and complete epithelization was observed within a period of two 2 months time and the patient was satisfied with the outcome of the surgery [11].

Conclusion

Gingival recessions are one of the main esthetic complaints of patients. It may also expose patients to sensitivity and increase the risk for root caries. A large variety of root coverage procedures for coverage of exposed roots exists. Almost all the procedures are predictable to a great extent and may produce satisfactory solutions. Selection of the appropriate procedure with meticulous surgical technique will provide successful and highly predictable results in the treatment of different types of gingival recessions. In this case complete root coverage was obtained with laterally positioned flap, therefore it can be concluded that miller’s class I recession defects can be successfully treated with lateral pedicle flap.

Conflict of interest

Authors declare that there is no conflict of interest to reveal.
References


