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Lateral Pedicle Graft, an Esthetic Answer to an Unesthetic smile: Two Case Reports

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Abstract: ***Gingival recession is a mucogingival defect of multifactorial origin. Various consequences associated with gingival recession are increased clinical crown length, hypersensitivity, root caries and cervical abrasion. Presence of gingival recession in the anterior teeth may cause esthetic concern to the patients. Such esthetic demands which can be satisfied with complete root coverage by soft tissue grafts that merge with the adjacent tissues in terms of thickness and color. This article contains two case reports of management of gingival recession in maxillary and mandibular anterior tooth region by lateral pedicle graft.***

Keywords: Gingival recession, root coverage, lateral pedicle graft

1. Introduction

Gingival recession is the apical migration of gingival margin which leads to exposure of root surface. The exposed root surfaces are predisposed to hypersensitivity, root caries and gives an unaesthetic appearance. The most common reasons for gingival recession are considered to be poor oral hygiene and faulty toothbrushing techniques. The other reasons which may predispose to gingival recession are thin gingival biotype, inadequate attached gingiva, shallow vestibular depth, prominence of root, anatomical malpositioning, abnormal frenal pull and iatrogenic factors like faulty restorations or prosthesis.[1,2]The most common site of gingival recession is buccal surface of teeth.

There are various treatment modalities present for the treatment of gingival recession. Selection of the technique to treat gingival recession depends on the clinical features of the recession site and demands of the patient.[3] These periodontal plastic surgeries can be pedicle soft tissue grafts, free soft tissue grafts or combination of both. The conceptualization of pedicle grafts is simply movement of gingival tissue from donor site where there is adequate width of attached gingiva over the denuded root surface.

The Lateral pedicle flap, also called the sliding flap, laterally positioned flap, or rotated flap, was first introduced by Grupe and Warren Jr in 1956.[4] Lateral pedicle flap can be used to cover isolated recession sites that have adequate donor tissue and sufficient vestibular depth lateral to it.[4]

The present case report illustrates the use of lateral pedicle flap technique for recession coverage of an isolated buccal recession defect.

2. Case Description

Case 1: A 30-year old female reported to the department of Periodontics with a chief complaint of receeding gums in lower front tooth region which appeared unesthetic to the patient. On clinical examination Miller's class I recession was seen in mandibular right central incisor (fig 1). There was presence of generalized moderate subgingival calculus and marginal gingival inflammation in mandibular anteriors. The attached gingiva was also inadequate in relation to 41. Considering all the clinical factors scaling and root planning was done along with oral hygiene maintenance instruction as part of Phase I therapy. Patient was recalled for re-evaluation after one week of Phase I therapy. On the recall visit, inflammation subsided and recession depth was measured with UNC-15 probe which was found to be 3mm. Surgical phase was planned as lateral pedical graft along with root conditioning for root coverage in relation to 41.

After achieving local anesthesia, 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 (fig 2). Then the V shaped gingiva was removed and beveled for flap adaptation. 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. Before covering the recipient site with pedicle flap the exposed root was conditioned with tetracycline (fig 3). Graft was adapted 1-2mm coronallyon recipient site and finger pressure was applied with a gauze piece until the graft was firmly seated. It was then firmly secured in place with 4-0 silk suture and periodontal dressing was placed (fig 4).

Patient was instructed not to brush at the surgical site for 15 days post-operatively and during this period 0.2% chlorhexidine mouthwash was prescribed twice daily. Antibiotics and analgesics were also prescribed to the patient for 3 days. 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. Oral hygiene instructions were reinforced. The patient was monitored regularly post-operatively to ensure good hygiene in the surgical area. Re-evaluation was done at 1 month follow up,

during which the site was reexamined for the recession height.

Figure 1: Pre- operative view

Figure 2: intra- operative view

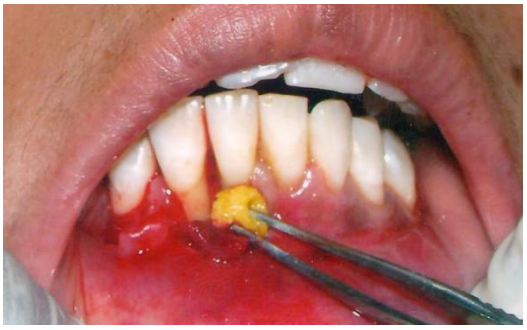

Figure 3: Rroot conditioning

Case II

Figure 4: Placement of sutures

Figure 5: 1 month post-operative view

Case 2:A 25- year old male patient presented to the department of Periodontolgywith Miller's Class III recession in relation to maxillary right lateral incisor (fig 6) which caused hypersensitivity and appeared unaesthetic to him. On clinical examination, 9mm buccal recession was seen in relation to 12. After phase I therapy including scaling and root planing, lateral pedicle graft was planned for recession coverage. The patient was informed that the tooth had questionable prognosis due to severe periodontal attachment loss.

The procedure was similar to that in case I. A vertical incision was made at donor site i.e., maxillary right central incisor, extending far apically into mucosal tissue beyond mucogingival junction. The base of flap should be wide to permit adequate vascularity. Sulcular incision extending from the V-shaped incision to vertical incision was made. A full thickness pedicle was raised with a cut back or releasing incision is made to dissipate the tension. The pedicle was then placed 1mm coronal on the recipient site and digital pressure was applied (fig 7). It was then secured in place with 4-0 vicryl sling suture (fig 8) and periodontal dressing. The post-operative instructions were given to the patient as in case 1.

Though the expected prognosis was questionable but the root coverage was found to be 100% on day of suture removal and on three-month follow up (fig 10).

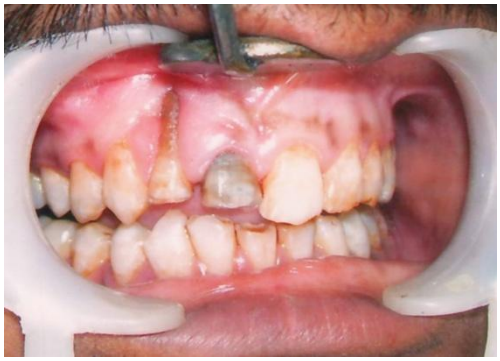

Figure 6: Pre-operative view

Figure 7: intra-operative view

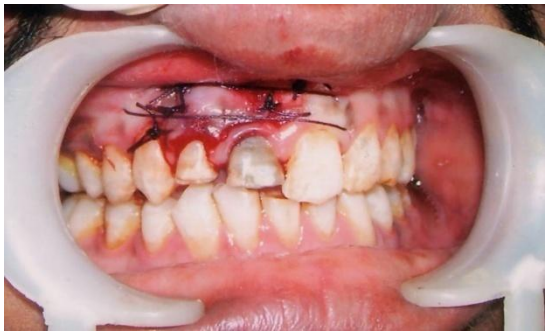

Figure 7: Suture placement

Figure 8: 1 week post-operative view

Figure 9: 3 month post-operative view

3. Discussion

There are various techniques for recession coverage described in literature. Grupe and Warren in 1956, introduced Laterally positioned pedicle graft, which was among the first mucogingival surgeries designed to cover exposed root surfaces.[5] Since then there are various modifications ofthis technique introduced by various authors. Staffelino in 1964 did split flap to minimize recession at donor site, Corn in 1964 did a cutback incision at the base of the flap to avoid any tension to the flap, in 1966 Grupe[6] included the use of submarginal incision at donor site to avoid creation of denuded osseous surfaceand Knowles and Ramfjord in 1971 did a free graft to cover the donor area.[7] The results of pedicle graft depends both on type of graft and also on recession defect. High rates of success have been reported in shallow defects treated with pedicle graft.[8]Sugarman did human histologic evaluation that new connective tissue attachment occurred with laterally positioned flap.[9] Common and McFall also did histological evaluation and concluded that lateral pedicle graft combined with root conditioning results in new cementum and collagen fibres that were oriented parallel to root.[10] The advantages of lateral pedicle flap are its simplicity, presence of only one surgical site and good vascularity of pedicle whereas the disadvantage of this method is possible bone loss and gingival recession on donor site. In this procedure, the adjacent keratinized gingiva is positioned laterally at the recipient site to cover the recession area. Guinard and Caffesse reported an average of 1mm of post-operative gingival recession on the donor site.[11] Therefore it is contraindicated where there is inadequate keratinized gingival at the donor site or where an osseous dehiscence or fenestration exists. Lateral pedicle grafts are indicated where there is sufficient width, length and thickness of keratinized tissue, coverage is limited to 1-2 teeth, sufficient depth of vestibule and narrow mesio-distal dimension of recession. Ruben et al., in 1976 demonstrated the method of partial and full thickness pedicle flap; a full thickness pedicle flap is prepared to cover the root surface and a partial thickness flap is prepared near the donor site to protect the exposed root surface and to preserve bone loss by preserving periosteum.[12] We have also followed this technique in our cases and achieved successful results without any loss of tissue at donor site and the patients were satisfied with the outcome of the surgery.

4. Conclusion

Gingival recession is one of the main esthetic complain of patients. It may also expose the patients to sensitivity and increase the risk for root caries. A large variety of procedures exist for coverage of exposed roots. The cases reported here show lateral pedicle grafts as an effective treatment modality for management of recession defects affecting teeth in the esthetic zones of mouth. However, careful case selection and surgical management is critical if a successful outcome is to be achieved.

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