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PERIOSTEAL PEDICLE GRAFT: A PROMISING TECHNIQUE FOR THE TREATMENT OF GINGIVAL RECESSION DEFECTS

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ABSTRACT

The periosteum is a rich vascular connective tissue with great regenerative potentiality. The qualities of periosteum make it an ideal autogenous graft. The present case report describes the utilisation of periosteal pedicle graft for the treatment of gingival recession defect successfully.

KEYWORDS: Gingival Recession, Periosteal Pedicle Graft, Periosteum

INTRODUCTION

Gingival recession is exposure of the root surface by an apical shift in the position of the gingiva[1]. Numerous factors may result in gingival recession[2,3,4]. Herewith a case is presented with isolated crowding on lower anterior teeth due to labially placed lower incisor.

Case Report

A 19 year old female patient reported to the private clinic situated in a town, Kurnool, India, with chief complaint of poor esthetics. she had class II div I malocclusion with crowding in the lower arch. She was advised orthodontic treatment for correction of malocclusion**.(Fig.1).** The patient had Miller class II gingival recession on the facial aspect of tooth 31(FDI). The patient was advised for the treatment of isolated gingival recession defect. The patient was in good systemic health with no contraindications for periodontal surgery. She was explained about the surgery and signed informed conscent was taken by the patient. A general assessment of the patient was made through her history, clinical examination and routine laboratory investigations. Before surgery the patient was received phase-I therapy, which included oral hygiene instructions and scaling and root planning by ultrasonic and hand instruments. Four weeks after phase I therapy, the patient was planned for surgical procedure.

Clinical parameters

Recession depth, distance between cemento-enamel junction (CEJ) and the most apical point of the gingival margin (GM)-7mm; probing depth, the distance between bottom of the pocket and apical portion of the GM-1mm were calculated and there was no attached gingiva.

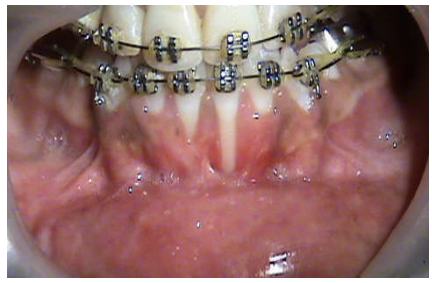

Fig.1.Pre operative picture Surgical technique:

Surgical Technique

The surgical phase was started after alignment of crowded teeth and before debonding of the appliance. After patient received local anaesthesia, two vertical incisions were given at the mesial line angles of adjacent teeth beyond the mucogingival junction. The sharp incision was given to separate buccal papilla from lingual papilla. Then from the bone margins full thickness flap was raised beyond the mucogingival junction. The flap is buccally pulled to create a tension on the periosteum. An incision was made through the periosteum where the flap was still attached to the bone to create a partial thickness flap. The partial thickness flap was extended to expose a sufficient amount of the periosteum. The process of obtaining periosteal pedicle graft (PPG) was initiated at the apical extent of the periosteum with the help of no.12 BP blade and was lifted slowly in a coronal direction. The periosteum was not separated completely and left it attached at its coronal most ends. Thus the PPG was

obtained and turned over the exposed root surface and sutured with a 4-0 absorbable ethicon suture. After stabilising the PPG the flap was coronally positioned and sutured using a sling-suture technique with a black silk 4-0 non absorbable suture. The releasing incisions were closed with interrupted sutures after which the operated site was covered with non-eugenol periodontal dressing for protection**.(Fig.2)**

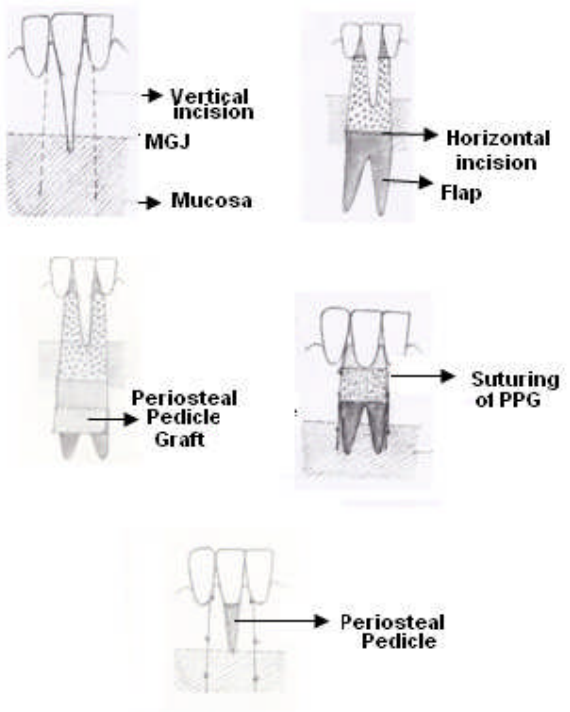

Fig.2. Illustration of surgical technique

Patient was advised to take diclofenac sodium (100mg bid) for five days. Patient was strictly instructed to follow the routine post operative instructions such as chlorhexidine (0.2%) mouthwash twice daily for a month and not to brush the operated teeth for 2 weeks. After 1 week the periodontal dressing and sutures are removed and surgical area was flushed with antimicrobial solution. The patient was recalled every week for the first month **(Fig.3)** and the orthodontic appliance was debonded after 1 month. Later on Patient is recalled once a month **(Fig.4)**.

Fig.3 Post operative after 1 month

Fig.4 Post operative after 3 months

Results

Healing was uneventful. The patient was satisfied with the treatment outcome. We could observe a great reduction in recession depth and good root coverage up to 6mm, increase in attached gingiva up to 3mm and excellent morphologic and chromatic resemblance with surrounding tissues because of gradual increase in adaptation of the edges of the graft to the adjacent tissues.

Discussion

Gingival recession is a matter of concern for both patient and dental professional as it is usually associated with deterioration in esthetics and function. Several surgical techniques have been developed to correct the gingival recession defects. The purposes of developing new techniques are to increase predictability and to reduce patients discomfort and the number of surgical sites, together with the need to satisfy the patient's esthetic demands, which include the final color and tissue blend of the grafted area[3]. The ideal requirement of graft is that it should have its own blood supply and potential for promoting the regeneration of lost periodontal structures. The adult human periosteum is highly vascular and comprises of atleast two layers, an inner cellular layer or cambium layer and outer fibrous layer[5,6,7]. Because of the osteogenic potentiality of periosteum it has been considered as a grafting material for the repair of bone and joint defects[8,9]. There are very limited studies which have mentioned the use of periosteum for the treatment of gingival recession defects successfully. Mahajan A reported the successful treatment outcome by using PPG for treating gingival recession defects[10,11].Lekovic et al and Kwam et al used periosteum as a barrier membrane for the treatment of periodontal defects in their studies[12,13,14]. A recent study reported that periosteal cells release a vascular endothelial growth factor[15]. The present case report successfully demonstrated a technique utilizing the periosteum as an autograft for the treatment of gingival recession defect.

The advantages of PPG over the gold standard technique i.e subepithelial connective tissue graft for treating the gingival recession are that periosteal pedicle graft does not require second operation to obtain a donor tissue, sufficient amount of tissue can be obtained from adjacent to the defect, less surgical trauma, less postoperative complications and better patient satisfaction. The present case reported an excellent post operative outcome showing great coverage of exposed root surface and increase in width of attached gingiva and keratinized gingiva. The later finding may be attributed to the migration of keratinized epithelial cells over the periosteum during wound healing, which resulted in the formation of keratinized attached tissue. The success of the technique may be due to the high vascularity of the graft, the single surgical site, patient comfort, reduced intraoperative time and minimum postoperative complications and the low cost of treatment.

As in every study this study has certain limitations. The technique explained, although simple, needs operator surgical skills. There may be chances of resorption of root surface by the periosteum as a long term complication, which has to be assessed yet.

CONCLUSION

Although the results of PPG technique for the treatment of gingival recession are promising, to compare the results of this technique with other established techniques for gingival recession defects and to assess the regenerative potentiality of PPG further clinical and histologic studies are to be carried out in future.

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