

Periosteal pedicle graft - A new Modality for Coverage of Multiple Gingival Recession Defects

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Quick Response Code



doi: 10.5866/2013.511139

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Article Info:

Received: October 14, 2012;

Review Completed: November 12, 2012;

Accepted: December 11, 2012

Available Online: March, 2013 (www.nacd.in)

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ABSTRACT:

AIM: This case report presents one such case which has been successfully treated using periosteal pedicle graft.

BACKGROUND: Various periodontal surgical procedures have evolved over time for obtaining complete root coverage of multiple gingival recession defects. A latest addition to these procedures is Mahajan's periosteal pedicle graft.

CASE DESCRIPTION: Periosteal pedicle graft is a latest innovation in root coverage procedures where periosteum is used for recession coverage. This pedicled graft utilises the osteogenic potential of the periosteum which is due to its highly vascular nature, presence of fibroblasts, osteoblasts and stem cells. In this case two adjacent Millers Class II recession defects were treated in a single surgery using this latest technique

CONCLUSION: The results obtained were quite encouraging to use it on a regular basis for root coverage.

CLINICAL SIGNIFICANCE: A newer less invasive modality to treat both sensitivity and unesthetic appearance due to gingival recession.

Key words: Recession, Periosteum, Pedicled Graft

INTRODUCTION

Gingival recession is defined as the displacement of the gingival marginal tissue apical to the cemento-enamel junction (CEJ).¹ Tooth hypersensitivity, inability to perform proper oral hygiene procedures or poor aesthetics are the problems faced by a patient having recession. If not treated in time it may lead to further complications like root caries, cervical abrasions and chemical erosions.² Over the time various periodontal surgical procedures have evolved for obtaining complete root coverage in adjacent multiple recession defects.

Mahajan has described one such new procedure for recession coverage by utilising the periosteal pedicle graft (Fig 1).³ This graft utilises the osteogenic potential of the periosteum which is due to its highly vascular

nature, presence of fibroblasts, osteoblasts and stem cells. The case presented in this paper had two adjacent, Miller's Class II recession defects and was managed successfully using this latest root coverage procedure.

CASE REPORT

A 32 year old male presented to the Department of Dental surgery, Armed Forces Medical College with a chief complaint of sensitivity in the upper front left teeth since three weeks. Intra oral soft tissue examinations were all normal except the presence of gingival recession in relation to tooth numbered 22 and 23 (Fig 2). The patient was systemically healthy with no contraindication for surgery.

The length / width of recession on 22 and 23 were 3/4 mm and 7/5 mm respectively in width. The recession on 23 was measuring 7 mm in length and 5 mm in width. The case was diagnosed as localised severe chronic periodontitis due to presence of Millers Class II gingival recession in 22 and 23.

The patient was subjected initially to scaling and root planing and was prescribed 0.12% chlorhexidine mouth rinse twice daily till completion of the treatment. After 1 month informed consent was obtained and the patient was taken up for surgical root coverage procedure for both the teeth using the periosteal pedicle graft in a single surgery.

The facial skin all around the oral cavity was scrubbed with 7.5% povidone iodine solution and the intra-oral surgical site was painted with 5% povidone iodine solution. Patient was locally anaesthetised with a solution of 2% Lignocaine with 1:80,000 adrenaline in the area of the defect. After obtaining local anaesthesia, an intrasulcular incision was made with No. 11 Bard Parker surgical blade in 22 and 23. Two horizontal incisions were made perpendicular to the adjacent interdental papillae, slightly coronal to CEJ preserving the gingival margin of the neighbouring teeth. Two vertical incisions were given starting at the terminal ends of the horizontal incisions which extended beyond the mucogingival junction.

A full thickness mucoperiosteal flap was raised 2-3 mm apical to the osseous crest. Tension was created by pulling the flap buccally and incision was continued through the periosteum to create a partial thickness flap. The overall raised flap was a combination of both full thickness and a partial thickness flap (Fig 3). Two vertical incisions were given on the periosteum starting 2mm apical to the point from where the partial thickness incision was given. The vertical incisions were then be joined by a single horizontal incision on the apical most part of periosteum. The periosteum was then raised with a periosteal elevator starting from the horizontal incision (Fig 4). Care was taken not to detach the periosteum at the coronal portion. Root planning was thoroughly done and depapillation was done on adjacent papilla. The pedicled periosteum obtained was then rotated to cover the recession defects and secured using and 5-0 absorbable suture (Fig 5). The flap was then coronally advanced over the recession defect and secured using 3-0 sutures (Fig 6). Periodontal pack and post operative instructions were given to the patients. Patients were prescribed antibiotics, analgesics and were instructed for oral rinsing with 0.2% chlorhexidine mouth wash twice daily. Both the sutures and pack were removed one week later. Patient was recalled and assessed postoperatively every 30 days for six months. At the end of six months there was uneventful healing of the gingival tissues with almost complete coverage of the recession areas with reduction in the sensitivity (Fig 7).

DISCUSSION

Various studies over the years have been undertaken to obtain root coverage in patients with gingival recession defects.^{4,5,6} The pedicled periosteum comprises of two layers, an inner cellular or cambium layer and an outer fibrous layer. The inner layer contains numerous osteoblasts and osteoprogenitor cells and the outer layer is composed of dense collagen fibre, fibroblasts and their progenitor cells, hence the regenerative potential of the periosteum is immense.⁷ Of various techniques

used for the treatment of gingival recession defects, the subepithelial connective tissue graft is considered the gold standard but it does have shortcomings like secondary surgical site and limited quantity of graft. Mahajan was the first to use this periosteal graft for recession coverage and achieve complete root coverage in all the cases.³ Since the periosteum is rich in vascular plexus it makes a predictable and viable graft over an avascular root surface. Lekovic et al used the periosteum as a barrier membrane for the treatment of periodontal defects.⁸

Generally treatment of multiple adjacent recession defects is quit challenging. The length and width of the SCTG harvested is generally not sufficient. But this technique overtakes those disadvantages by preventing a second surgical site and harvesting the required amount of graft without any complication. Almost complete root coverage was achievable in the case one. No necrosis of the graft was been observed postoperatively in the case presented. This characteristic advantage is because of the pedicle attachment to the bone and the coronally positioning of the flap over the graft ensuring good protection of the graft. It becomes evident that the thickness of the graft harvested is a very important criterion for success.

CONCLUSION

The technique described even though looks feasible requires certain prerequisite like good surgical dexterity on the part of the operator, especially during the lifting up of the periosteum which is firmly adherent to the underlying bone. Any long term complications are yet to be assessed. Histological studies revealing the exact type of healing as well as randomized controlled trials comparing the results of this technique with already established techniques should be undertaken in order to use it on regular basis for root coverage.

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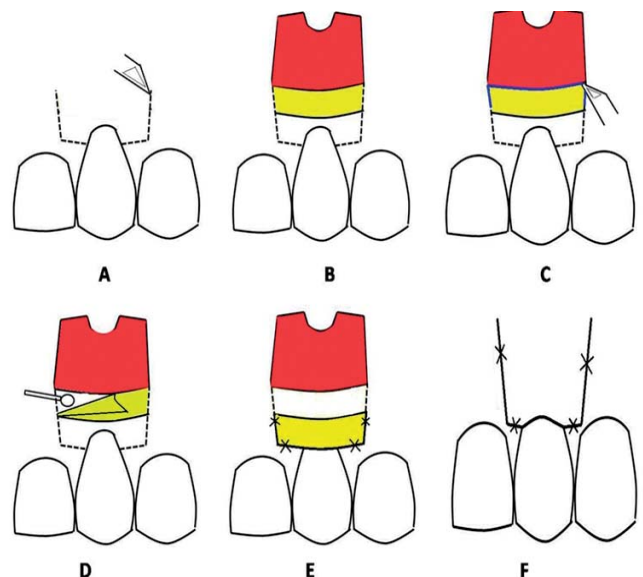


Figure 1: Pictorial representation of root coverage procedure using periosteal pediclegraft



Figure 2: Recession defects in 22 and 23

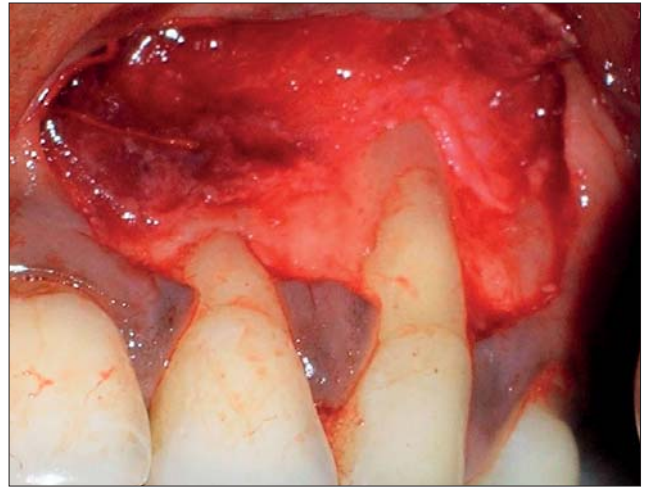


Figure 3: Combined full and partial thickness flap raised

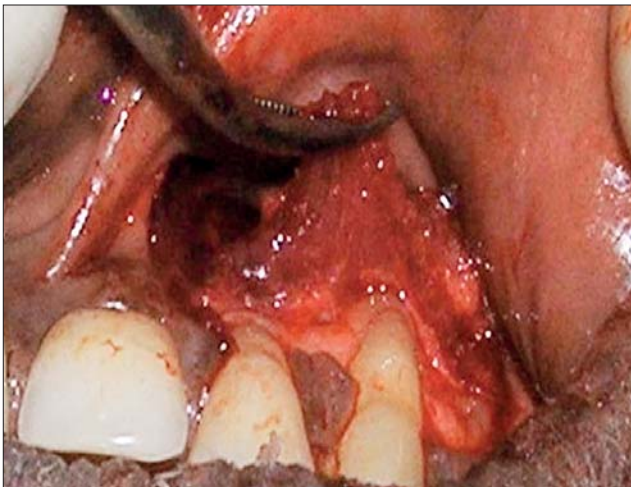


Figure 4: Pedicled periosteum being raised



Figure 5: Rotated periosteal graft sutured using 5-0 absorbable sutures



Figure 6: Flap coronally advanced and sutured with 3-0 sutures



Figure 7: Six months post-op showing complete root coverage