Case Report

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A double lateral pedicle graft technique for palatal recession coverage on dental implants

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Abstract:

Rough surfaces of dental implants, when exposed to the oral environment, are conducive to biofilm colonization and can predispose the affected implant to periimplantitis. Recession coverage using soft-tissue grafts is one of the treatment modalities used for the treatment of exposed implant threads. Recession coverage on the palatal aspect of maxillary implants is difficult due to the firm nature of the palatal mucosa and, consequently has not been widely documented in the literature. This case report documents a novel double-pedicle technique for palatal recession coverage on a dental implant. Two pedicle grafts were obtained from either side of the implant with the mucosal recession: a full-thickness lateral-pedicle graft from the distal aspect and a subepithelial connective tissue pedicle from the mesial aspect. The connective tissue pedicle was stabilized first on the area of mucosal recession and was then covered with the distal full-thickness lateral pedicle. Complete recession coverage was obtained, and the result was observed to be clinically stable after 18 months of follow-up. The technique demonstrated in this report can be a useful tool for the treatment of localized palatal recessions on dental implants.

Key words:

Connective tissue graft, gingival augmentation, gingival recession, lateral pedicle graft, mucogingival surgery

INTRODUCTION

Treatment of mucosal recession is an essential part of periimplant soft-tissue management. On natural teeth, recession coverage may be done for several reasons such as esthetics, prevention of root caries, hypersensitive root surfaces, and the treatment of inadequate attached gingiva.[1] Recession coverage on dental implants may be done for better esthetics and to prevent the onset of biofilm-induced periimplant mucositis or periimplantitis.[2] Exposed rough surface implants are niche areas for colonization by dental plaque. Re-osseointegration in such areas is considered difficult or even impossible to achieve.[3]

As the palatal mucosa is firmly attached to the underlying bone, it is difficult to displace the mucosa coronally or laterally for recession coverage.[4] A few techniques have been described to mobilize the palatal mucosa, such as the palatal roll flap technique and modifications,[5,6] rotated split palatal flap,[7] the vascularized interpositional periosteal connective tissue graft,[8] and the palatal advanced flap[9] among others. Most of these techniques are used for buccal soft-tissue augmentation or to achieve a primary closure over immediate implant placement or guided bone regeneration sites. The present case report describes a simple laterally displaced double graft technique for palatal recession coverage on dental implants and also demonstrates the stability of the obtained results after 18 months of follow-up. The technique combines the advantage of a pedicle graft and that of a bilaminar technique using a subepithelial connective tissue graft.

CASE REPORT

A 35-year-old female patient reported with soft-tissue recession on the palatal aspect of a dental implant in the maxillary right first premolar region. A modified palatal roll-flap technique, as described by Kulkarni *et al*.[10] had been used to augment the buccal tissue at the second stage and the palatal recession was caused due to the necrosis of the palatal split-thickness flap [Figure 1]. The

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second corrective palatal surgery was done after 5 weeks of the palatal roll-flap procedure. A written informed consent was obtained from the patient at the time of implant placement as well as at the time of the soft-tissue grafting surgery.

Figure 1: Palatal recession associated with the implant in 14 region

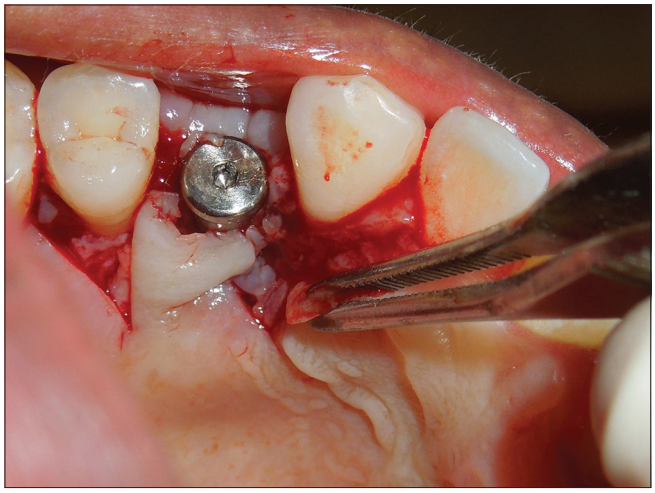

Figure 3: Connective tissue pedicle from the anterior palatal rugae area obtained

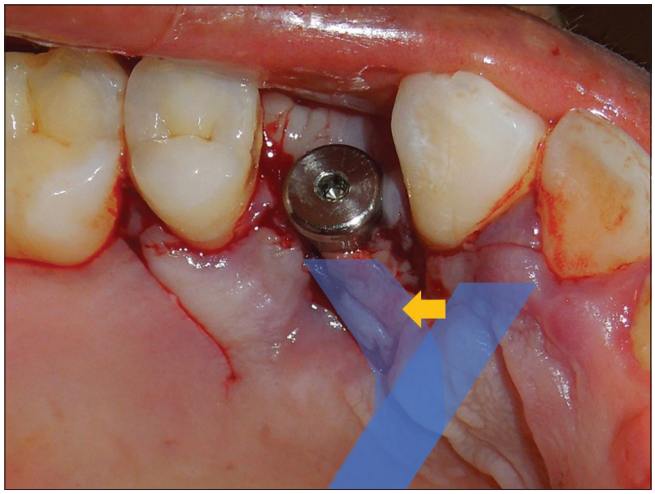

Figure 5: The yellow arrow denotes the direction of sliding the mesial connective tissue pedicle

A partial thickness, lateral pedicle graft was outlined on the distal aspect of the recession and the recipient area was de-epithelized [Figure 2]. A second pedicle graft composed

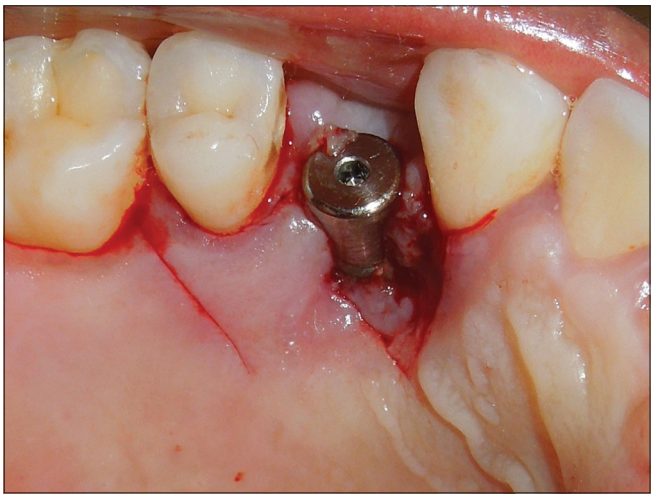

Figure 2: Preparation of the recipient bed and outline of the lateral pedicle graft

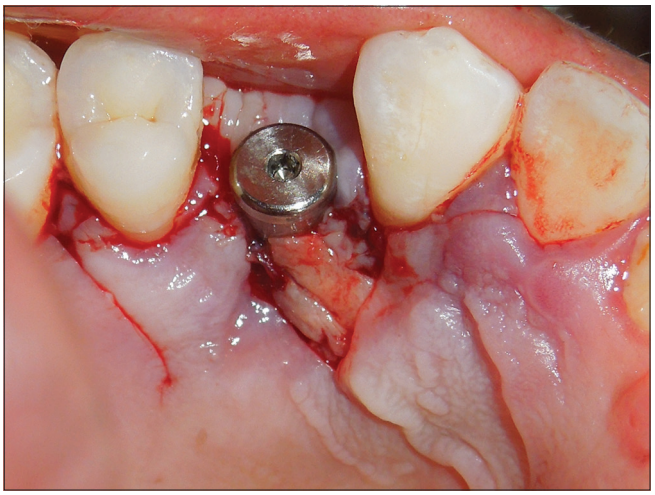

Figure 4: Connective tissue pedicle sutured around the implant using a sling suture

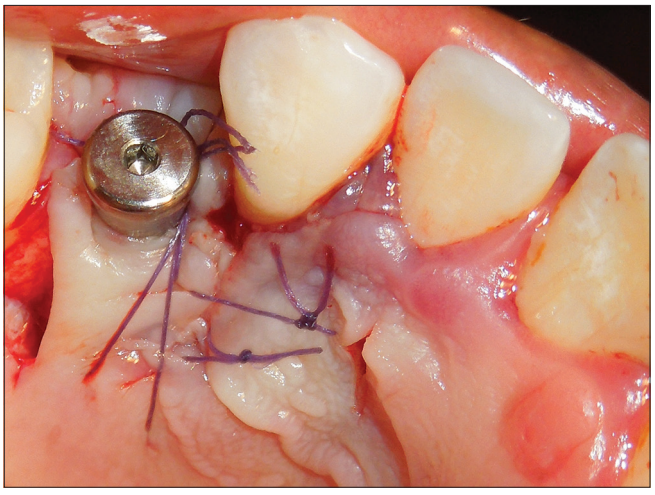

Figure 6: Lateral pedicle graft from the posterior aspect secured over the connective tissue pedicle

of subepithelial connective tissue was obtained from the anterior rugae area [Figure 3]. A split-thickness pouch was prepared under the rugae area using a 15c Bard-Parker blade. A connective tissue pedicle was dissected out from this area underneath the split-thickness flap and rotated over the recipient area. The connective tissue pedicle was then sutured on the recipient area using a sling suture belayed around the healing abutment [Figures 4 and 5]. This site was then

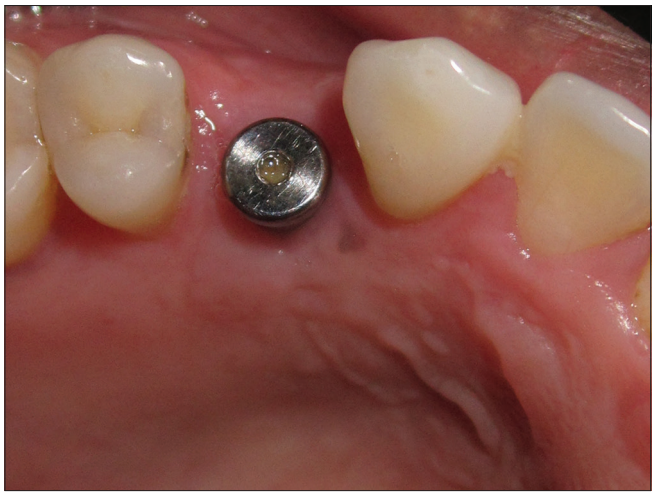

Figure 7: Tissue contours and healing as seen at the 1-month recall visit

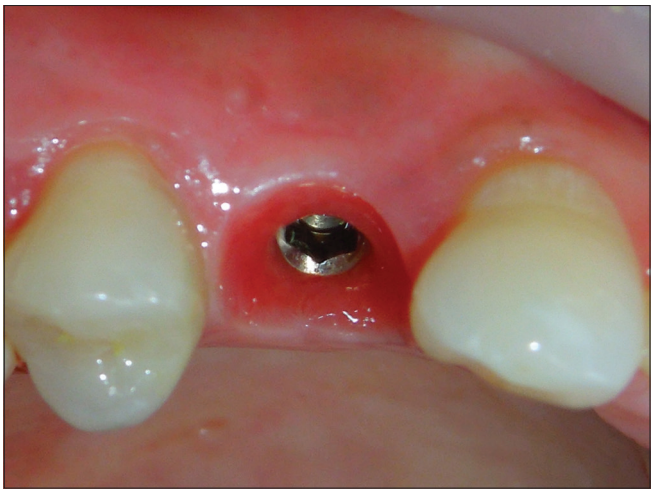

Figure 8: Stable palatal soft-tissue margin seen at the 1-month recall visit

Figure 9: Mucosal tissue contour seen after 18 months

Figure 10: Healthy peri-implant sulcus at the area of recession coverage

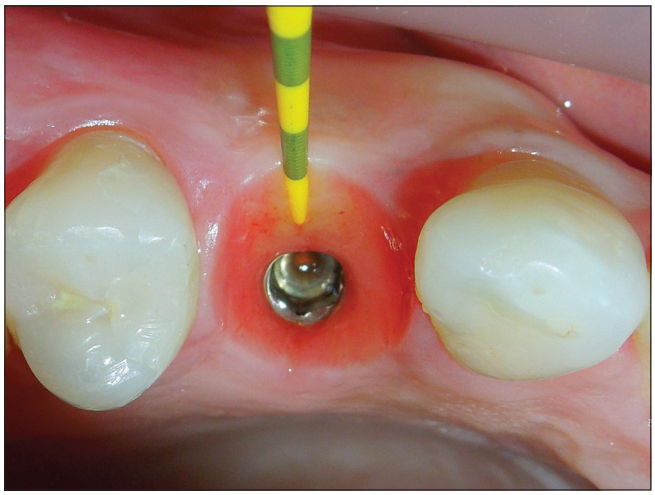

Figure 11: Firm peri-implant mucosa seen after 18 months

Figure 12: Palatal tissue thickness seen after 18 months

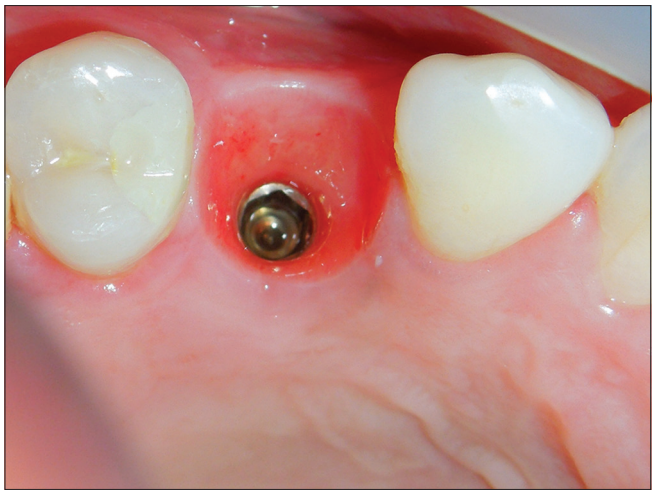

Figure 13: Palatal view of tissue contours seen after 18 months

covered with the lateral pedicle graft obtained from the distal aspect [Figure 6]. The epithelized lateral pedicle graft was also secured around the healing abutment with sling sutures in combination with mattress bites and the mesial edge of the epithelized pedicle was secured anteriorly to the rugae area using 5-0 polyglactin 910. The patient was prescribed 400 mg of ibuprofen, three times a day for 4 days. A 0.2% chlorhexidine mouth rinse was also prescribed two times a day for 2 weeks.

Complete healing and closure of the recession defect was observed at the 1-month recall visit [Figures 7 and 8] and the prosthesis was delivered. At the 18 months of follow-up visit, the palatal mucosa was stable with no residual recession [Figures 9 and 10] and a probing depth of 3 mm was seen [Figure 11]. No bleeding on probing was seen and on the removal of the prosthesis, a well-contoured mucosal architecture was observed [Figures 12 and 13].

DISCUSSION

Palatal recession coverage has been very sparsely reported in the literature. The technique used by Harris[4] is relatively simple and could be used as an effective alternative to the technique described in this report. Artificial soft-tissue substitutes such as acellular dermal matrix may also be employed in the management of mucosal defects. However, with the use of free grafts, the success of the procedure is influenced by factors such as graft shrinkage and necrosis. Graft shrinkage of 25%–45% has been reported with free grafts.[3] Pedicle grafts demonstrate less shrinkage and faster healing due to the partially maintained blood supply to the graft.[11]

In the present case, the predisposing factor for the palatal recession was the inadequate crestal bone width on the palatal aspect of the implant. The precipitating factor for the recession was the surgical mobilization of the subepithelial connective tissue at the site during the palatal roll flap procedure. The overlying partial-thickness flap then underwent necrosis leading to the recession. The presence of a smooth collar on the dental implants may be advantageous for such clinical situations as the smooth machined collar is more amenable to effective plaque control. Clinical decision-making for the choice of dental implant systems and designs is always a challenge, and the choice should always be based on sound clinical evidence.[12]

As the tissue thickness too needed to be augmented, a subepithelial pedicle from the anterior rugae area was also used. The subepithelial connective tissue pedicle graft has been popularized recently by techniques such as the vascularized interpositional connective-tissue graft technique.[8] This is an intuitive technique and can be used to mobilize palatal connective tissue efficiently but it requires a higher level of expertise on the part of the operator. Thickness of the marginal tissue is an important attribute that influences the stability of the tissue; for example, in a randomized controlled trial by Tavelli *et al*., a gingival thickness of ≥1.2 mm was found to be a significant predictor of future stability.[13] The addition of a connective-tissue graft to a recession coverage procedure is known to improve the long-term stability of the outcome.[14]

The laterally displaced flap was first described by Grupe and Warren[15] and was later revised to exclude the marginal gingiva from the flap.[16] In the present case report, a laterally displaced flap was obtained along with the marginal gingiva. This was done to ensure an adequate tissue volume at the recipient site. The anticipated gingival recession at the donor site was a conscious choice based on the clinical judgment that a recession on a tooth would be easier to maintain as compared to exposed implant threads. It was also anticipated that the resulting recession would reduce over time due to the creeping attachment of the keratinized palatal mucosa akin to that observed with free gingival grafts.[17]

At the 18th-month follow-up visit, minimal residual recession was seen on the second premolar tooth [Figure 12]. The palatal mucosa around the implant was stable with a 3-mm sulcular depth and no bleeding on probing. This indicated a clinically healthy and stable soft-tissue attachment associated with the implant.

CONCLUSIONS

The double lateral pedicle technique described here is an effective technique to treat localized palatal recessions on single implants and to obtain sufficient tissue volume. The obtained soft-tissue contours have also been seen to be stable after 18 months of follow-up. Further investigation with more cases is essential to decipher the technical nuances and clinical performance of this technique.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initial s will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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