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Management of Multiple Adjacent Mandibular Recession Defects using Multiple Lateral Pedicle Flap Autografts-A Case Report

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Case Report

History

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ABSTRACT

Background: Gingival recession in the aesthetic zone hampers the appearance of the patient's smile and is cause for hypersensitivity in the teeth affected. Usually, the more the number of teeth affected, the more surgical procedures may be required to provide root coverage adequately.
Methods: Five anterior teeth in the mandibular aesthetic zone were treated using multiple separate Laterally Displaced Pedicle Autografts (LPAs).
Results: 90 days' follow-up reveals adequate increase of keratinized tissue and root coverage.
Conclusions: The surgical technique employed here may be a possible approach for single-sitting root coverage procedures of multiple adjacent anterior recessions, provided adequate thickness of biotype exists. This also limits discomfort due to elimination of grafting and provides aesthetic results.

Keywords: Gingival Recessions, Dentin Sensitivities, Periodontal Atrophies, Surgery, Pedicled Flaps.

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Introduction

Recession of the gingival margin in a localized area, especially in the anterior aesthetic zone, remains an issue of concern in the current scenario of surgical approaches. Exposure of root by receding gingiva is both a cosmetic as well as functional issue. Craniofacial aesthetics are supplanted by restoring normal anatomic structures, which include the oral mucosa. One of the ways to achieve this is by augmentation of soft tissues of the periodontium by different techniques of root coverage. Besides extreme sensitivity to the hard tissues of the teeth, limited maintenance of plaque control and diminished oral hygiene maintenance often lead to carious destruction of the roots. The primary objective of reconstructive surgery of the mucogingival tissues is to achieve coverage of root recessions to a predictable degree. In recent years, the desire for smile designing among patients, along with an increased acceptance of cosmetic oral surgical procedures are key factors to an increased demand for such surgical techniques which can achieve optimum coverage. However, the rates of success for each of the existing techniques are so far contradictory and are therefore subjected to application and review regularly. Traditionally, the use of pedicle flaps has been done along with supplementary use of subepithelial connective tissue grafts (SCTG) as the most dependable method for coverage of recessed areas. The following case report was done root coverage in five teeth in the mandibular aesthetic zone that was managed using five separate laterally displaced pedicle autografts to ensure and evaluate its aesthetic results along with gain in keratinized tissue.[1]

Case Report

A 22-years-old male patient reported to the Department of Periodontics, Manipal College of Dental Sciences, Mangalore, MAHE, with a chief complaint of tooth sensitivity in his lower anterior region with concerns about the appearance of the concerned teeth (Figure 1). The patient did not report with any relevant medical or drug history that could hamper the healing of his oral soft tissues, post-surgery. The patient had

- Miller's Class II recession[2] defects of 2 mm bilaterally on 33 and 43, and of 3 mm on 42.
- Miller's Class I recession defects of 3 mm on the 31 and 32, and of 2 mm bilaterally on 13 and 23, respectively. (Figure 3)

All the recession defects were Recession Type 1 (RT1) according to the classification system given by Cairo.[3] The probing depths seen clinically were ranging from 2-3 millimetres, and the patient experienced sensitivity on the affected teeth on tactile and air blast stimuli. All measurements included in this case report were recorded on cast models using caliper. The patient provided signed informed consent prior to undergoing the procedure as planned.

Figure 1. Presentation of the gingival recessions at first visit.

Figure 2. Outline of incisions to achieve root coverage using multiple LPAs in mandibular anterior aesthetic zone.

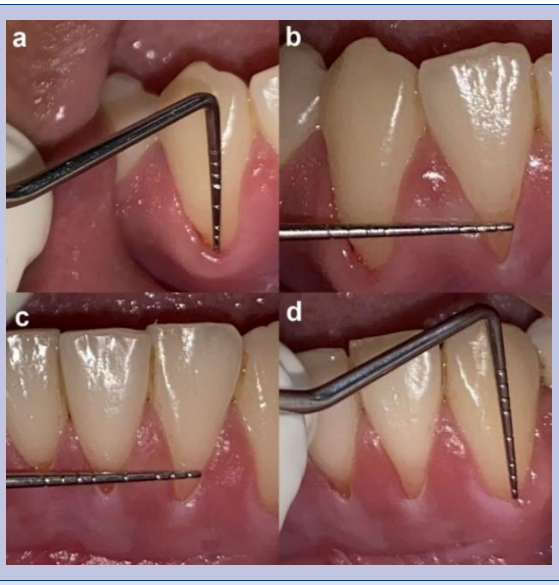

Figure 3. Recession depth (RD) and Recession width (RW) in the affected region.

Table 1. Resolution of recession at 15-day follow-up

	AT **15 DAYS** POST-OP		
TOOTH	**PERCENTAGE OF Gingival recession defect (GRD) COVERAGE**		
	PRE-OP	**POST-OP**	**EQ**
31	3 mm	0.5 mm	**83.3%**
32	3 mm	2.5 mm	**16.67%**
33	2 mm	1 mm	**50%**
42	3 mm	0 mm	**100%**
43	2 mm	1.5 mm	**25%**

EQ: [(PRE-OP GRD-POSTOP GRD)/ PRE-OP GRD] × 100

First, using a flame-shaped bur and high-speed airotor handpiece (NSK), the root surface prominences (convexity) of 43, 33 and 32 were reduced; following which the surgical procedure was conducted according to the planned treatment outline (Figure 2, Note the surgical outline for semilunar coronally advanced flaps in upper canine bilaterally, to be performed). Starting from 42, after administering local anesthesia by infiltration, using a #15c blade and handle, marginal gingiva was resected with a V-shape incision around the exposed root surface of 42 and a beveled incision was given in the opposite side of the donor area (to permit overlap of flap). Vertical and horizontal incision around the donor site of 41 were outlined– the donor flap was designed at 1.5x wider than the recession width and 3-4x longer than its width. A partial-full thickness pedicle flap was reflected using sharp followed by blunt dissection until beyond the mucogingival junction (MGJ), in order to facilitate coronal advancement. Releasing/cutback incision was made to eliminate tension on the pedicle while laterally positioning onto recipient site, and the partial thickness pedicle was sutured to the periosteum covering bone irt 42 using 5-0 black silk. The procedure was repeated for 43, 31 and 33. For 32, V-shaped incision around the recession was given and undermined apically using sharp dissection until beyond the MGJ to advance coronally and stabilize with sling sutures. Following haemostasis, the surgical site was irrigated with normal saline and a non-eugenol periodontal pack was placed (Figure 4, a-d). Patient was prescribed non-steroidal anti-inflammatory drugs (Ibuprofen 400 mg+ Paracetamol 325 mg+ Caffeine 25 mg salt) as required (SOS) and Diclofenac 50 mg+ serratiopeptidase 10 mg salt twice a day for 3 days to reduce post-surgical pain and inflammation along with undiluted 10 mL Chlorhexidine gluconate mouthwash (0.2% w/v) twice a day for 7 days post-surgery to maintain oral hygiene at the operated region. Instructions including to avoid brushing and to not disturb the periodontal pack were given.

Results

The pack and sutures were removed 15 days after the procedure, and the operated region was irrigated carefully. It was observed that there was mild erythema and edema at the operated region, progressive epithelial healing at 15th day showed no abnormalities on visual examination (Figure 5), CRC was already achieved at 42 while mild to moderate degrees of closure of recession depth and width was seen irt the other teeth, as is documented in Table 1. Oral hygiene instructions and Modified Stillman's technique for brushing were advised. The patient was put on recall to monitor progression of healing and maintenance of hygiene.

On the final assessment at 90 days after the procedure (Figure 6), good coverage and reduced sensitivity was seen, along with improved aesthetics (Table 2). The final range of coverage achieved for the recessions were in a range of 75% to 100% (with a mean 90%) for the mandibular aesthetic zone.

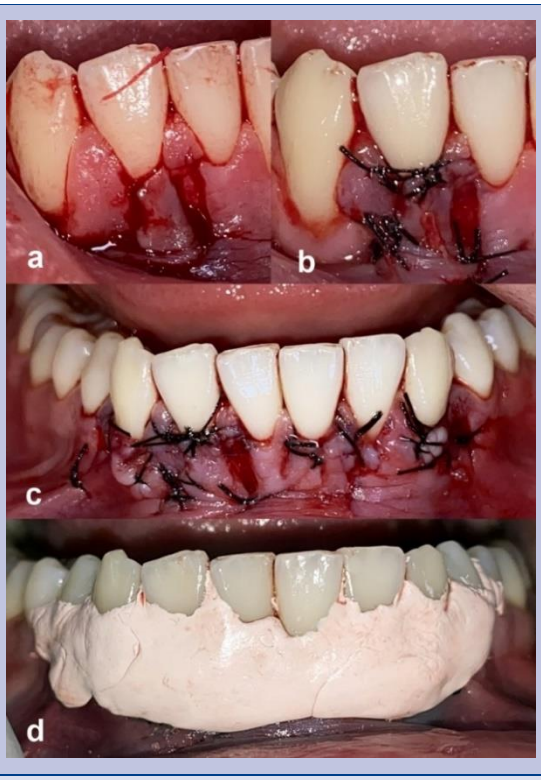

Figure 4. (a) Incision for LPA in 42; (b) Lateral placement and suturing with 5-0 black silk; (c) final immediate post-operative appearance after suturing and haemostasis in mandibular anteriors; (d) placement of non-eugenol periodontal dressing.

Figure 5. Clinical picture taken at 15 days post-op.

Figure 6. Clinical picture taken at 90 days post-op. Note the CRC achieved at teeth #31, 32 and 42. The mandibular canines show a recovery of GRD dimensions upto 75%.

Table 2. Final recovery of gingival recession after 90 days

TOOTH #	PERCENTAGE OF GRD COVERAGE		
	PRE-OP	POST-OP	EQ
31	3 mm	0 mm	**100%**
32	3 mm	0 mm	**100%**
33	2 mm	0.5 mm	**75%**
42	3 mm	0 mm	**100%**
43	2 mm	0.5 mm	**75%**

EQ: [(PRE-OP GRD—POSTOP GRD)/ PRE-OP GRD] × 100

Discussion

In this case report, multiple separate laterally displaced pedicled autograft technique were used to achieve root coverage of multiple gingival recessions in adjacent teeth in the mandibular aesthetic region. This technique has previously been used for very good management of denuded roots. It can be highly useful as it bypasses the need for another surgical site as is required by either free autografts, or harvesting of SCTG, but only in case where the tissue thickness is adequate prior to surgery. It is often seen in case of free autografts that vascular supply as well as stabilization of the graft can get hampered, which does not arise in case of lateral pedicle technique.[4]

Previously, several case series have been published using the technique of modified lateral sliding flap to treat multiple adjacent recession cases, but the main differences from the technique we've used here is firstly, in the flap design, i.e., a combined flap created by oblique incisions at the proximal and distal borders of the area requiring root coverage and displacing it laterally to suture it in position. Secondly, all of these previous attempts have been done using a combination of the lateral pedicled flap as well as placing soft tissue autografts, which included a bilaminar approach using sub-epithelial connective tissue graft, to increase tissue thickness as well as achieve root coverage.

The patient was recalled at day 15 for assessment of initial epithelialization of soft tissue at the surgical site as per Pippi *et al.*[5] and at day 90 for evaluation of completion of wound healing and keratinization.

Limitations

In the present case report, CRC was achieved only in relation to 31, 32 and 42. On the mandibular canines, there was partial recovery of the width and height of the recession. This could be attributed to the decreased zone of attached gingiva present in the region along with the anatomy of the mandibular canine (root prominence), which makes it a difficult area to achieve CRC in. Additionally, the surgical design of the pedicle flap against gravity could also be a contributing factor for low MRC in 33 and 43. In this case, the outcome of coverage via LPA is 90%[6], and need for a second surgery is bypassed.

Conclusions

The alternatives considered for the management of recessed gingiva traditionally include either free or pedicled autograft of gingival tissue. In case of treatment considered for a single root or an isolated case, coverage is usually excellent and can be expected to achieve complete resolution in case of Class I and II recessions according to Miller's Classification using horizontally displaced pedicled flaps with good visual results. However, the challenge persists when considering root coverage of multiple adjacent recessions, and in presence of adequate tissue thickness of adjacent gingiva, multiple pedicles can be created and displaced laterally to achieve root coverage. Studies investigating its efficacy as a

routine or standalone measure for cases satisfying these indications are still required currently.

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