

Root coverage with free rotated papilla autograft using envelop technique

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Abstracts: Background: Most commonly palatal region is used as the donor site for obtaining connective tissue graft for root coverage as it has the advantage of providing a wide area for obtaining the graft. In the cases requiring small size of graft other intraoral regions can also be used. This is a case report which demonstrates the use of interdental papilla for obtaining connective tissue for root coverage in single teeth in the lower anterior region. Methods: The technique involved creating an envelope in the tissue around the denuded root surface and placing the connective tissue graft taken from the interdental papilla over the recession defect. Result: Clinically significant amount of root coverage was obtained. Conclusion: Root coverage of a shallow narrow recession defect can be obtained with free rotated papilla autograft using envelop technique.

Key Words: Case Report, Connective Tissue, Gingival Recession, Surgical Flaps. [Goyal R et al, NJIRM 2011; 2(4) : 117-120]

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Introduction: Gingival recession is one of the common soft tissue problems faced by dentists and patients. It causes tooth hypersensitivity that is due to root exposure and produces an unesthetic appearance with uneven gingival margin levels. The past years has seen an explosion of interest in mucogingival surgery, with accompanying variations in surgical techniques to treat recession defects.

A variety of surgical techniques, displaying different degrees of success, have been suggested since the lateral sliding flap was first proposed in 1956¹ to obtain root coverage in areas of soft tissue recession. These surgical procedures can be classified as pedicle soft tissue grafts, free soft tissue grafts, or a combination of the two.² Among the soft tissue grafts, the subepithelial connective tissue graft, associated or not³ with a coronally advanced flap,⁴ with a full-thickness papillary or lateral pedicle flap,⁵ or with a partial-thickness double pedicle graft,⁶ is one of the most used and predictable techniques in the esthetic treatment of soft tissue recessions. Unfortunately, all of these procedures require a donor site for the connective tissue: whichever technique is used (a trap-door approach with periosteal elevator,⁵ a single incision,⁷ or a parallel incision technique,⁶) a second surgical site is needed, usually in the palatal premolar area, therefore increasing patient morbidity.

Anatomic structures, such as the greater palatine artery, limit the size and amount of connective tissue obtainable in patients with gingival recession.⁸ Complications, such as patient discomfort, post-surgical pain, paraesthesia, and bleeding from the donor area, can occur if the artery is injured. In addition, obtaining connective tissue from the palatal area is technique sensitive. Therefore, an easier technique with fewer complications should be considered.

This is a case report that presents a technique for treatment of isolated recession defect in the lower anterior region. This technique is a modification of the free rotated papilla autograft, originally described by Tinti and Parma-Benfenati⁹ for coverage of shallow gingival recession. The coronally advanced flap combined with a free connective tissue graft harvested from one adjacent papilla has also been tried in periodontal microsurgery.¹⁰ The aim of this approach is to minimize the postsurgical course & patient discomfort in single-recession treatment.

CASE REPORT: A 24 year old male patient was referred to the department of periodontics as he complained of sensitivity on taking cold liquid substances, in the lower anterior region. Oral examination revealed the presence of crowding in the lower anteriors along with recession on the facial surface of #24, which was labially placed. There was no abrasion present. The patient was

not willing for orthodontic treatment. Oral prophylaxis was done and oral hygiene instructions were given in the initial visit. Patient was recalled after one month for follow up.

Periodontal examination revealed good oral hygiene with no bleeding on probing. The recession on #24 measured 5mm in depth and 4mm in width. There was no loss of interdental papilla in the mesial and distal of #24. It was a Miller's class I recession. There was a wide papilla available distal to #26 from where graft could be obtained.

The decision was made to treat the defect with free rotated papilla autograft combined with enveloping technique. Preoperative photographs were taken (fig. 1, fig. 2). An informed consent form was explained to and signed by the patient.



Fig. 1



Fig. 2

Anaesthesia was obtained and the exposed root was root planed. The flattening of the root prominence by rotating bur was performed (fig. 3).



Fig. 3

Through an undermining partial thickness incision, an "envelop" is create in the tissue around the denuded root surface (fig 4).



Fig. 4

The connective tissue is obtained from the wide papilla present distal to #24. The papilla is de-epithelialized leaving the marginal gingiva intact. Then the buccal papillary tissue of the de-epithelialized papilla is excised and rotated 180 degrees to place its base at the CEJ, matching with exposed root surface (fig 5).



Fig. 5

The graft is placed in the previously created envelope so that it completely covers the formerly exposed root area. Finger pressure is applied with a piece of gauze until the graft is firmly seated. Then a sling suture with vertical mattress is placed with 6-0 to pull the envelope coronally with graft being contained in it (fig.6).



Fig. 6

A periodontal dressing was placed (fig. 7). The patient was placed on ibuprofen and chlorhexidine rinse. No systemic antibiotics were used.



Fig. 7

The dressing was removed 2 weeks postsurgery. The area was deplaqued. There appeared to be 100% root coverage and a complete survival of the graft (fig.8)



Fig. 8

The patient was instructed to clean the area with a soft end-tufted brush. The area was re-evaluated at 6 weeks. Routine postoperative care was given and chlorhexidine rinse was discontinued. The final evaluation was done at 3 months postoperative. There was 0.5mm of exposed root surface (fig. 9).



Fig. 9

The quality and quantity of tissue covering the palatal root were judged adequate. The sensitivity had decreased to a point that it no longer bothered the patient.

DISCUSSION: The aim of this case report was to present use of a minimally invasive technique for treatment of isolated shallow gingival recession. In this case report envelop technique was used to

avoid the damage by vertical incision and obtained improved healing.³

When connective tissue graft is taken from palatal region, the patient experiences a higher degree of discomfort at the donor site than at the area involved in root coverage. Also the thickness of the palatal masticatory mucosa varies according to the position in the dental arch and ranges from 2 to 5 mm.¹¹⁻¹⁵ In this case report the connective tissue was taken from the interdental papilla present near the recipient site. It reduced the discomfort of the patient, favouring the acceptance of the surgical treatment. This procedure has the decided advantage of avoiding any palatal patient discomfort, good color compatibility with adjacent tissue.⁹ Report of 16 cases consecutively treated by the free rotated papilla autograft technique combined with the coronally advanced flap using surgical microscope gave excellent gain in root coverage.¹⁰

The marginal tissue at the donor site was preserved to accomplish lesser damage of donor area. A sling suture with vertical mattress was used to contain and obtain better coverage of the connective tissue graft.

This technique is indicated in single root-covering procedures when a wide papilla is present in the adjacent area of the recession defect. It is recommended in class I and II shallow recessions according to Miller.¹⁶ The limitation of this approach is represented by the dimensions of interdental papillae available for obtaining connective tissue graft. This condition reduces the application of this technique to only shallow marginal tissue recession. In this case report the donor tissue has not been obtained from adjacent but the next distal papilla which was wider which may be considered a second surgical site but still was less traumatizing than obtaining the connective tissue from palate..

There may be limited indication for use of root coverage procedure in this case as the ideal treatment plan would also involve orthodontic correction. However, there are certain situations where this procedure may be desirable considering the patient's perspective. The technique utilized in

this case produced a good clinical result. This technique should be considered in isolated shallow recession defects with availability of wide papillary tissue.

References:

1. Grupe J, Warren R. Repair of gingival defects by a sliding flap operation. *J Periodontol* 1956; 27: 290-295.
2. Wennström JL. Mucogingival therapy. In: *Proceedings of the World Workshop in Periodontics*. *Ann Periodontol* 1996; 1: 671-701.
3. Raetzke PB. Covering localized areas of root exposure employing the "envelope" technique. *J Periodontol* 1985; 56: 397-402.
4. Langer B, Langer L. Subepithelial connective tissue graft technique for root coverage. *J Periodontol* 1985; 56: 715-720.
5. Nelson SW. The subpedicle connective tissue graft. A bilaminar reconstructive procedure for coverage of denuded root surfaces. *J Periodontol* 1987; 58: 95-102.
6. Harris RJ. The connective tissue and partial thickness double pedicle graft: A predictable method of obtaining root coverage. *J Periodontol* 1992; 63: 477-486.
7. Hüzeler MB, Weng D. A single- incision technique to harvest subepithelial connective tissue grafts from the palate. *Int J Periodontics Restorative Dent* 1999; 19: 279-287.
8. Reiser GM, Bruno JF, Mahan PE, Larkin LH. The subepithelial connective tissue graft palatal donor site: Anatomic considerations for surgeons. *Int J Periodontics Restorative Dent* 1996; 16: 130-137.
9. Tinti C, Parma-Benfenati S. The free rotated papilla autograft: A new bilaminar grafting procedure for coverage of multiple shallow gingival recessions. *J Periodontol* 1996; 70: 1064-1079.
10. Francetti L, Del Fabbro M, Testori T, Weinstein RL. Periodontal Microsurgery: Report of 16 cases consecutively treated by the free rotated papilla autograft technique combined with the coronally advanced flap. *Int J Periodontics Restorative Dent* 2004; 24: 272-279.
11. Uchida H, Kobayashi K, Nagao M. Measurement in vivo of masticatory mucosal thickness with 20 MHz B-mode ultrasonic diagnostic equipment. *J Dent Res* 1989; 68: 95-100.
12. Studer SP, Allen EP, Rees TC, Kouba A. The thickness of masticatory mucosa in the human hard palate and tuberosity as potential donor sites for ridge augmentation procedures. *J Periodontol* 1997; 68: 145-151.
13. Muller HP, Schaller N, Eger T, Heinecke A. Thickness of masticatory mucosa. *J Clin Periodontol* 2000; 27: 431-436.
14. Wara-aswapati N, Pitiphat W, Chandrapho N, Rattanayatikul C, Karimbux N. Thickness of palatal masticatory mucosa associated with age. *J Periodontol* 2001; 72: 1407-1412.
15. Kim HJ, Yun HS, Park HD, Kim DH, Park YC. Softtissue and cortical-bone thickness at orthodontic implant sites. *Am J Orthod Dentofacial Orthop* 2006; 130: 177-182.
16. Miller PD. A classification of marginal tissue recession. *Int J Periodontics Restorative Dent* 1985; 5(2): 9-13.