

# Root Coverage of Palatal Recession Using Epithelial Embossed Connective Tissue: A Case Report

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## Abstract

Labial and buccal gingival recession is a common finding in the adult population, which can occur due to various factors. When present, it can lead to an unesthetic appearance and can cause hypersensitivity. However, very limited literature is available regarding the incidence of palatal gingival recession. Many times it goes unnoticed during routine clinical examinations. Although there are no esthetic concerns in these regions, recession can cause sensitivity and pose a technical challenge in surgical correction because of poor accessibility and visibility. This case reports the treatment of a single palatal recession defect using an epithelial embossed connective tissue graft. The 12-month follow-up of the case showed significant root coverage (93.6%) and decreased sensitivity. The advantage of the harvested graft was that the connective tissue was not exposed, as it was tucked into the underlying flap, and the mucosal contour was maintained.

**Key words:** *palatal/gingival recession, connective tissue grafts, periodontal plastic surgery*

## Introduction

Gingival recession occurs due to the apical migration of the gingival margin from the cemento-enamel junction (CEJ), which leads to exposure of root surface. It is often associated with displeasing esthetics, root hypersensitivity and attachment loss (Pradeep *et al.*, 2012). Successful coverage of exposed roots for esthetics and functional reasons has been the objective of various mucogingival surgeries (Shubham *et al.*, 2015, Chan *et al.* 2015). According to the proceedings from the 2014 American Academy of Periodontology Regeneration Workshop, buccal root coverage may be attained through the application of various surgical techniques (Tatakis *et al.*, 2015), the gold standard being the classic subepithelial connective tissue graft (Langer and Langer, 1985). Recently, a modification to the procedure was described by Sterrett in 2008 to deal with large mucogingival defects

that failed to show complete root coverage with the conventional technique. However, little has been done when it comes to palatal recession, making it reasonable to assume that not much importance has been given to these types of cases to date. There are many factors that can complicate treating palatal recession defects owing to the type of tissue in this region, which makes pedicle flaps or any other regenerative procedures difficult to perform (Harris, 2001). This case report demonstrates successful coverage of a palatal recession using an epithelial embossed connective tissue graft, suggesting new avenues to treat palatal defects.

## Case presentation

A 35-year-old male patient reported to the dental clinic with the chief complaint of hypersensitivity in an upper left posterior tooth for the preceding 6 months. The patient was systemically healthy and was a non-smoker. His dental history revealed that he had used desensitizing toothpaste for 2 months, but there was no improvement. Additionally, he expressed his inability to maintain oral hygiene in that area.

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Intra-oral examination showed fair oral hygiene, mild gingival inflammation with no pockets or loss of attachment on any teeth other than 26. Detailed periodontal examination revealed 6 mm of recession on the palatal surface of 26, with a probing pocket depth of 3 mm and attachment loss of 9 mm (*Table 1*). There was no loss of papillary height and no non-carious cervical lesion in relation to 26 (*Figure 1*). Further radiographic examination revealed about 1 mm of interdental bone loss in the region. Hence, it was diagnosed to be a case of chronic gingivitis with localized periodontitis.

**Table 1.** Comparison of pre- and post-operative measurements of clinical parameters

	Pre-operative	Post-operative	Change in mm
Recession depth (mm)	6	0.5	5.5
Probing depth (mm)	3	1	2
Clinical attachment level (mm)	9	1.5	7.5

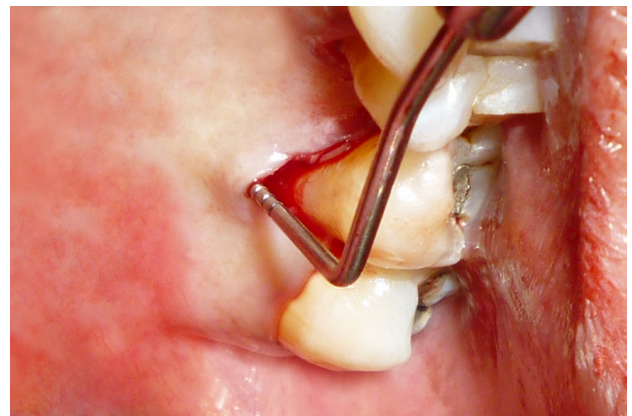


**Figure 1.** Pre-operative view of palatal recession, tooth 26 (primary figure).

### Case management

After thorough evaluation of the site, which showed about 1 mm bone loss, and the fact that palatal tissue could not be advanced to cover the defect owing to its non-stretchable nature, the decision to treat the area with an epithelial embossed connective tissue graft (EECTG) was made. The treatment plan was thoroughly explained to the patient and informed written consent was obtained before initiation of the therapy. Thorough scaling and root planing was done 4 weeks prior to the surgery. A template was prepared by placing tinfoil on the defect to replicate the exact dimensions, which were about 6 mm by 6 mm in size. The recipi-

ent site was prepared under local anesthesia. A sulcular incision was made on the palatal aspect of the involved tooth. A submarginal incision of 0.5 mm was used at the interdental areas to retain the proximal tissues within the confines of the interdental space. The incision was extended to the distal and mesial papillae of the adjacent teeth, respectively. Sharp dissection of a partial-thickness flap extended 4 mm laterally and apically, forming an envelope flap. Dissection was such that the periosteum was retained on the bone. This preparation technique by Raetzke (1985) resulted in a recipient pouch at the treatment site (*Figure 2*).



**Figure 2.** Incisions made and envelope pouch created.

The previously prepared tinfoil template was placed on the palatal region of 14 and 15. The primary incision, which was a scalloped sub-marginal incision, was made in between the above teeth (*Figure 3*). Subsequently, a crestal incision was extended to the distal and mesial papilla of 14 and 15, respectively. A split-thickness dissecting incision, extending more than 3 mm apical and lateral to the primary incision, was made to undermine and define the extent of the donor graft. To free the tissue from the donor site, a secondary incision was made perpendicular to the palate at the outer periphery of the graft. The entire graft was separated from the underlying bone and removed (*Figure 4*).

The graft was tucked into the envelope pouch, with the “embossed epithelium” completely covering the recession defect (*Figure 5*). A simple suturing technique (4-0 silk suture) was used to secure the tissues and graft together on each side (*Figure 6*). Likewise, the palatal area was sutured and the previously prepared stent covering the donor area alone was placed after periodontal dressing.

Postoperative pain and edema were controlled with ibuprofen. The patient was instructed not to brush his teeth in the treated area and was asked to rinse with a chlorhexidine mouthrinse (0.2%) for three times a day for 1 minute for one week. The periodontal dressing and sutures were removed two weeks after the surgery.



The patient was instructed to clean the area with a soft end-tufted brush and a cotton-tipped applicator dipped in chlorhexidine and also to avoid hard foods and chewing in the area. He was recalled once every 6 weeks for the next 12 months.

### Clinical outcomes

There appeared to be 100% root coverage and a complete survival of the graft 2 weeks post-operatively

(Figure 7). The final evaluation was done at 12 months postoperatively. The clinical measurements were recorded (Table 1). There was 1.5 mm of recession and a probing depth of 1.0 mm, representing a 5.5 mm gain in root coverage (93.6%) and 7.5 mm gain in attachment level (Figure 8). The thermal sensitivity had decreased to the point that it no longer bothered the patient. Additionally, there was visible gain in the papillary volume.



Figure 3. Outline of graft on the donor site.



Figure 6. Sutures placed.



Figure 4. Epithelial embossed graft.



Figure 7. Two-week post-operative view, tooth 26.



Figure 5. Epithelial embossed connective tissue graft tucked into the envelope flap over the recession defect (primary figure).



Figure 8. One-year post-operative view, tooth 26.

## Discussion

A wide variety of periodontal plastic surgical procedures have been described to correct mucogingival problems and to cover denuded root surfaces (Richardson *et al.*, 2015). However, little has been presented to show root coverage of a palatal root surface. In this case report, though there was not 100% root coverage, the 5.5 mm root coverage (93.6%) was clinically significant and was considered a success over a period of 12 months. Similar results were presented in treatment of palatal recessions by Harris (2001) and Deepa *et al.* (2013).

Sub-epithelial connective tissue graft (SECTG) was first introduced by Langer and Langer (1985) and modified by Harris (1992), Allen (1994) and Bruno (1994). It combines the advantages of the pedicle flap procedure and guarantees a double blood supply from both the overlying pedicle flap and the underlying periosteum. Other advantages of connective tissue grafts are the good color match with neighboring soft tissues and a less invasive palatal wound, as well as long-term results in terms of root coverage (Bruno, 1994). However, technically this procedure can be difficult owing to the nature of palatal tissue, which makes its manipulation limited.

In the present case, a conventional connective tissue graft, which generally is the most common form of graft used in periodontal plastic surgeries, was not used as the defect was large in size. Secondly, there was a possibility of exposure of the graft leading to compromised root coverage. Reliable root coverage was important in this case as patient was concerned about maintenance of proper oral hygiene in that area.

Hence, the technique as described by Sterrett (2008) for deep and wide mucogingival defects, whose key feature is the retention of “embossed epithelium” on the coronal border of the SECTG, the shape of which precisely fits the defect to be treated, was used. Retaining epithelium in the shape of the defect has two advantages. Firstly, there is the potential for the graft epithelium and the flap epithelium to heal by primary intention. This avoids the more protracted and labored process seen with healing by secondary intention. Secondly, even if the embossed epithelium sloughs, during the period it has been on the graft it will have protected the integrity of the underlying connective tissue. By protecting the underlying connective tissue for a longer period of time, healing may progress more favorably and more predictably. Additionally, the graft being protected by the overlying epithelium made it more viable at the recipient site, owing to limited pliability and repositioning of the palatal mucosa, making this modified technique of SECTG an excellent choice of technique.

Clinically, the treated area appeared healthy in this case. There was a 2 mm sulcus with no bleeding on

probing. The results appeared better at 2 weeks post-operatively than at the final evaluation. However, the decrease in the amount of root coverage was insignificant and there could be several possible explanations for it. Trauma to the area is the most likely explanation. This trauma may have occurred with mastication, oral hygiene efforts, or other causes. The histologic evidence of any kind of regeneration was not available, but based on the results of Rosetti *et al.* (2013) there is a possibility that some regeneration may have occurred.

There may be limited indications for treating palatal recessions (Wilcko *et al.*, 2005). Inability to reposition the tissue in the area would make either a pedicle graft, guided tissue regeneration, or an acellular dermal matrix graft impractical, thus making SECTG or any of its variations a more successful technique for these kinds of cases (Wennstrom, 1996). Despite the slight loss of root coverage, the patient and clinician were satisfied with the result. Because the true benefit of these treatment procedures is also about stability, long-term follow up periods are required to validate these treatment modalities (Hamdan *et al.*, 2009).

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