



MANAGEMENT OF GINGIVAL RECESSION USING POUCH AND TUNNEL TECHNIQUE WITH SUBEPITHELIAL CONNECTIVE TISSUE GRAFT 1 YEAR FOLLOW UP: A case report

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ABSTRACT The subepithelial connective tissue graft has been proved to be a highly predictable treatment modality for coverage of gingival recession. Case presentation: A 24-year-old male patient present with Miller's class II recession defect on #22. Clinical parameters assessed included recession depth, recession width. A CTG was harvested from the palate and properly adapted to the root surface. The graft and flap were secured with single-interrupted sutures and double-crossed sutures to achieve complete root coverage. Complete root coverage (CRC) was maintained at 1 year with completely satisfactory esthetic outcomes. **Conclusion:** root coverage using SCTG is an effective method to Miller's class II recession defect and with measured aesthetic outcome.

KEYWORDS :

INTRODUCTION:

Gingival recession, is defined as apical shift of gingival margin towards/beyond cemento-enamel junction and consequently results in tooth root surface exposure. Gingival recession is usually associated with anatomic factors, inflammatory conditions, and trauma, and is one of the most common esthetic complaints of patients in periodontal clinics. Esthetic improvement, dentinal hypersensitivity, root caries are all indications for surgical treatment.¹

A variety of surgical techniques have been used for root coverage; such as sub-epithelial connective tissue grafts (SCTG), guided tissue regeneration and coronal advanced flap (CAF).

The irregular outline of the gingival margin, even in the absence of tooth hypersensitivity, may make plaque control more difficult for the patient to perform, especially when the recession is triangular in shape so called "Stillman cleft".

Gingival recession presents significant therapeutic challenges for dentists, such as restoring the protective anatomy of mucogingival complex, the restoration of aesthetics, regeneration of cementum, periodontal ligament and of support alveolar bone, treatment of root sensitivity, root surface caries prevention, prevention of periodontal disease progression in areas where proper hygiene can not be maintained.

According to the protocol described by Allen² the "tunnel" technique includes preparation of a supraperiosteal mucosal flap with intrasulcular incisions. This allows the mobilization of the cervical gingiva and therefore, the creation of a "pouch". By undermining the interdental papillae, a mucogingival tunnel can be elaborated between all adjacent pouches. Subepithelial connective tissue graft is then inserted into the tunnel, partially exposed over recessions and sutured in this position.

On the other hand, the disadvantages are difficulties in preparing the receptor site with an extreme care to not perforate the flap or disrupt papillae as well as the delicate placement of the graft.

The purpose of this article is to demonstrate the efficacy and clinical results of the use of subepithelial connective tissue grafts harvested from the palate in the treatment of Miller Class II localized gingival recession by using pouch and tunnel technique.

There are various methods to measure the thickness of palatal tissue, such as directly probing to the bone using a periodontal probe, with an

endodontic reamer or an injection needle after local anesthesia, but can also be used computed tomography or ultrasound devices.³

Studer et al.⁴ have demonstrated that the palatal root of the first molar and the canine represent the natural anatomical anterior and posterior barriers for graft harvesting because the connective tissue is thinner after these areas.

The modified tunnel technique⁵ is a minimally invasive method for augmenting the gingiva, the blood supply can be preserved to the maximum and the coverage the graft is optimized, as compared with the former techniques. It requires a muco-periosteal dissection beyond the mucogingival junction and also in each papilla. Another change is the microsurgical approach that uses ophthalmic blades and sutures, small instruments that have been developed specifically to facilitate the preparation of supra-periosteal tunnel and minimize the risk of iatrogenic perforation and surgical trauma.

CASE REPORT:

A 24-year-old male patient reported to the outpatient department of periodontics with a chief complaint of sensitivity and exposure of root surface in relation to the lower front teeth region. The patient was found to be systemically healthy and exhibited good oral hygiene. On examination of the area of miller's class II gingival recession on #22 (Figure 1). The most important criterion for selecting this procedure was sufficient thickness of marginal and papillary gingiva at the recipient site so as to facilitate complete undermining for creating the pouch and tunnel without detaching the papillary tip.

In the Phase I therapy, the patient underwent a thorough supragingival and subgingival scaling. Minor occlusal adjustments were performed. After phase I therapy, the surgical procedure started with local anesthesia and the sulcular incisions given around the affected teeth using ophthalmic blade. Thereafter, a supraperiosteal tunnel was made labially beyond muco-gingival junction. The tunnel was sufficiently prepared to accommodate a connective tissue. It was ensured that no trauma occurred to the marginal gingiva. With the help of a periodontal probe was checked the completion and posting of tunneled flap (Figure 2).

The CTG was obtained from palate through trap door technique. A modified single incision technique it provides a graft of uniform thickness (1.5 mm)⁶(Figure 3 & 4).

After detachment, the connective tissue graft was placed in saline solution and kept moist to prevent desiccation until it is inserted into

the recipient site. Once the receptor site is prepared, a graft that extends at least 5 mm to either side and 5 mm apical to the deep recession. The graft is inserted and held in place with sling sutures at both lateral ends of the envelope as described for the tunneling technique.⁷

Finally, the lateral edges of the recession are approximated with simple or double sutures without engaging the underlying graft, with the aim of reducing the surface of the graft exposed and stabilize the wound. The most apical suture should be placed first, proceeding in an apico-coronal direction to gradually reduce the tension of the flap and flap approximation is completed (Figure 5).

The advantages of this technique are: simplicity, minimal surgical invasiveness, and good esthetics because the interdental papilla is preserved.

Postoperative instructions included amoxicillin 500 mg three times daily (TID) for 5 days. Ibuprofen 600 mg TID and chlorhexidine rinses twice daily were also indicated. Gentle cleaning with a cotton ball impregnated with a metronidazole gel 1.5% was indicated afterwards. Sutures were removed after 15 to 20 days (Figure 6). Normal hygiene was resumed at 30 days.

All the clinical parameters were recorded at baseline 1, 3, 6 months and 1 year post operatively (Figure 7 & 8).

Clinical outcomes:

For 2 weeks until the removing of the sutures, no pain or discomfort was reported. The patient was called back for clinical examination at 6 months and 1 year aftersurgery.

The root coverage was found to be complete and stable over this 1-year period of time, and the esthetic appearance completely satisfied the patient. A stable wide attached gingiva was obtained, and the patient was no longer hypersensitive.

DISCUSSION:

In this case report, there was 100% root coverage. The root coverage was considered a success over a period of 1 year.

The connective tissue grafts remains the most effective and predictable treatment for radicular coverage in the treatment of gingival recession.⁸ The tunnel technique eliminates the incisions and protects the interdental papillae, ensuring the aesthetic outcome of the procedure. One of the difficulties in obtaining the coverage of several recessions using autogenous connective tissue grafts is the obtaining of an appropriate size graft, because of anatomical limitations in the donor area, respectively the hard palate. Careful preparation of the tunnel flap, in particular in patients with thin biotype and small gingival papillae, is essential for avoiding perforations. In some cases, the dissection of extremely thin papillae may be impossible due to the high risk of ruptures.⁹

Another modification is the application of a microsurgical approach using microsurgical blades and sutures, which minimizes the surgical trauma (Zuhr et al., 2007; Cortellini and Tonetti, 2001). New tunnel instruments (e.g. Tunneling Knife I/II, Hu-Friedy, Rotterdam) which are small, specially curved elevators have been developed in order to facilitate the supraperiosteal preparation of the tunnel and minimize the risk for iatrogenic perforations.

The connective tissue that may be harvested once from the palate is limited, it can be used for root coverage in a limited number of teeth. The obtained graft shrink and reduce in size if it is too thin, but there are also problems in revascularization and healing if it is too thick. The success of this technique depends on the thickness of the obtained tissue graft. The thickness should be between 0.5 and 1 mm in order to obtain a better aesthetic result. As a result, the thickness and volume of the tissue to be grafted from the donor site are important factors in determining the appropriate treatment method and estimate prognosis.¹⁰

The surgical combined tunnel technique presented in this report for the allows complete coverage of the CTG and thus ensures optimal vascularization, even with thin periodontal phenotypes. Zucchelli et al showed in 2014 that removal of submucosal tissue during CAF with CTG surgery allows better root coverage and aesthetic results in the treatment of gingival recessions affecting the lower incisors.

This report described a CTG procedure with lateral movement of the flap accomplished by stretching the surrounding tissues without vertical incisions, combining the advantages of an tunnel approach while reducing the exposed graft area; increasing the revascularization in a more stable wound, with minor discomfort, and excellent esthetic outcomes.

CONCLUSION:

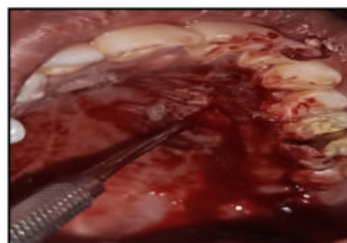
The subepithelial connective grafting along with pouch and tunnel technique making it an ideal choice for treatment of recession.



Fig(1): Preoperative intraoral photograph on labial side



Fig(2): Tunnel preparation



Fig(3): Graft harvested using single line incision



Fig(4): Harvested subepithelial connective tissue graft



Fig(5): The graft was inserted with sling sutures



Fig(6): Healing after 15 days**Fig(7): Final outcome after 1months showing complete root coverage****Fig(8): followup after 1 year****REFERENCES:**

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