

## Pouch and tunnel technique in conjunction with connective tissue graft-A Paramount for treating Miller's class II gingival recession.

### Abstract:

**Introduction :** Gingival recession is both unpleasant and unesthetic, therefore demanding esthetic correction. Pouch and Tunnel technique with CTG is a minimally invasive quick healing alternative for recession coverage effectively.

**Objective :** The objective of this case was to achieve complete root coverage of exposed root using pouch and tunnel technique with connective tissue graft for optimal patient compliance.

**Methodology-** After local anesthesia, at the recipient site sulcular incision was made, pouch and tunnel was created, any remaining collagen fibres, muscle fibres were cut. Papillae were kept intact. Connective tissue graft was harvested from palate area using a single incision technique, which was then inserted into recipient pouch and tunnel.

Sutures were placed to hold graft in position, the entire gingivo-papillary complex was then coronally positioned and sutured, periodontal pack was applied. To hold gingivo-papillary complex in coronal position, composite stops were made pre-surgically.

**Result :** The surgical site appeared normal without any trace of sloughing, healing progressed uneventfully and the gingival recession was partially covered with satisfactory aesthetic result.

**Conclusion :** Pouch and Tunnel technique proved to be minimally invasive technique showing optimal root coverage with good patient compliance.

**Keywords:** gingival recession, root coverage, pouch and tunnel technique, connective tissue graft

### Introduction:

Gingival recession is defined as the exposure of the root surface by an apical shift in the position of the gingiva[1]. It is both unpleasant and unesthetic and can be either localized or generalized. It implies the loss of periodontal connective tissue fibres along with the root cementum and alveolar bone. It can lead a multitude of clinical problems as hypersensitivity, root caries, cervical abrasion, and difficulty in maintaining oral hygiene. Many patients request cosmetic correction for that. Various periodontal plastic surgical procedures such as pedicle flaps, free gingival grafts, coronally advanced flap, coronally advanced flap along with connective tissue graft, tunnel technique, guided tissue regeneration, allografts or combination techniques etc. have been used successfully for root coverage.[2,3] The treatment

of gingival recession aims at covering the exposed root surface and arresting the progression of tissue loss. The objective of this case was to achieve complete root coverage of exposed root using pouch and tunnel technique with connective tissue graft for optimal patient compliance.

### Description of Case:

A 22 year old male patient reported to outpatient department of periodontology with the chief complain of sensitivity and

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unaesthetic appearance with respect to the lower front tooth region since few months.

He was systemically healthy and medical history was non-contributory. His personal history revealed horizontal scrub motion for brushing teeth. On clinical examination, the patient was diagnosed to have Miller's class II gingival recession on the mandibular right central incisor. The loss of attachment was 6 mm in tooth #41. Traumatic occlusion was ruled out for the patient. The tooth was slightly rotated. Considering the factors which might affect the treatment outcome of the root coverage procedures, pouch and tunnel technique with connective tissue graft was considered.

#### **Presurgical therapy:**

The surgical procedure was explained to the patient and informed consent was obtained. Prior to the surgery the patient was given oral hygiene instructions along with correct brushing method, scaling and root planing was done. The clinical parameters like probing depth, recession depth and loss of clinical attachment were recorded before and after the surgery.

#### **Surgical treatment:**

After the patient demonstrated a satisfactory standard of plaque control, he was scheduled for the surgery. Pre procedural rinse with 0.2% chlorhexidine was done. The exposed root surface was scaled and planed. The surgical site was anesthetized using 2% Lidocaine HCl with adrenaline (1:80000). A sulcular incision was made through the recession area using 15C blade, pouch and tunnel was created using a tunneling instrument, any remaining collagen fibres, and muscle fibres were cut. The pouch and tunnel so created undermining the tissue far beyond the mucogingival junction so that there was adequate relaxation of the flap to allow entrance of the connective tissue graft underneath. Care was taken not to cut the interdental papilla in order to maintain blood supply and facilitate healing. After anesthetizing the donor site, Connective tissue graft was harvested. It was harvested in the region between maxillary canine and maxillary first molar, 2-3 mm away from the gingival margin, using a single incision technique. After harvesting the graft, donor site was sutured. The graft that was procured was placed within the prepared pouch and tunnel. To stabilize the graft, it was sutured to mesial and distal papilla of # 41 with 4.0 silk suture. The entire gingivopapillary complex was then coronally advanced and sutured with the help of composite

stops made on # 41 presurgically. Periosteal holding sutures were given at the apical extent to prevent any gravitational pull. Coe- pack was applied (see in Fig 1(a-h)). Antimicrobials and analgesics were prescribed to the patient for 5 days. Patient was advised to rinse his mouth with 0.2% chlorhexidine mouthwash and not to brush the surgical site for a week. The donor site sutures were removed after a week and the recipient site sutures were removed after 15 days. During next 4 weeks, only gentle tooth brushing was permitted.

#### **Results;**

Healing was satisfactory. Patient was recalled every week for the first month. Oral hygiene instructions were reinforced at every appointment. Two weeks postoperatively acceptable recession coverage with good amount of attached gingiva and satisfactory gain in clinical attachment was reported. One month postoperatively, the surgical site appeared normal without any trace of sloughing, healing progressed uneventfully but there was partial recurrence of gingival recession.(see in Fig 2(a-d).

#### **Discussion:**

An exposed root surface often causes pain and / or sensitivity upon exposure to cold and hot substances, more prone to caries and unaesthetic appearance[4]. Various mucogingival procedures such as free gingival graft, coronally advanced flap(CAF) , coronally advanced flap with connective tissue graft, have been used successfully resulting in root coverage. In 1985 Raetzke[5] described the envelope technique for the treatment of single deep-wide gingival recession defects. It includes subepithelial connective tissue grafting in an envelope created around the root surface with a split thickness dissection without vertical incisions. This technique offers good healing, minimal surgical trauma at recipient site, increased blood supply from the lateral papillary areas and improved esthetic appearance in the early phase of healing. In the same year Langer[6] described subepithelial connective tissue grafting technique for the use in the treatment of gingival recession defects. The high success rate obtained with this type of graft was related to maintaining the blood supply at the overlying flap and the connective tissue basement. The major benefits of subepithelial CTG are improved color matching at the recipient site and reduced morbidity at the donor site. Allen[7] in 1994 demonstrated a supracrestal envelope technique including a partial- thickness

dissection at the recipient area without vertical incisions in soft tissue grafting for root coverage for multiple adjacent areas of gingival recession. Zabalegui[8] et al reported highly successful recession coverage in the treatment of 21 using subepithelial connective tissue grafting combined with a tunnel technique. As compared to other root coverage procedures, the pouch and tunnel technique with connective tissue graft is a minimally invasive quick healing alternative for recession coverage effectively. The strategy to the pouch and tunnel technique is that it preserves the lateral blood supply of the flap by eliminating the vertical incisions. Tarnow demonstrated that lateral blood supply was more significant than apical as tissues survived even after severing the apicocoronary blood supply[9].

In the present case satisfactory root coverage was achieved with good esthetic results and optimal patient compliance. The gingival blood supply was preserved at the apical and lateral surfaces which influenced early healing. The overlying gingiva was also preserved which prevented it from becoming necrosed. Hence the pouch and tunnel technique is a predictable procedure for root coverage for treating isolated Miller's class I & II gingival recession defects.

**Conclusion:**

The results of the present case demonstrated that pouch and tunnel technique along with the use of a subepithelial connective tissue graft has proven several benefits including early tissue healing, esthetic results and good patient cooperation.

**Limitations:**

The tooth was rotated and the patient was not willing for orthodontic correction so there occurred a partial recurrence of the recession, which limits this case report.

**Fig1-Surgical Procedure:**



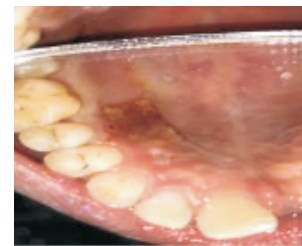
(a) Preoperative



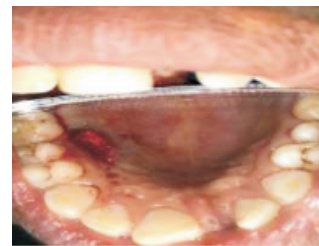
(b) Tunnel Preparation



(c) Template Preparation



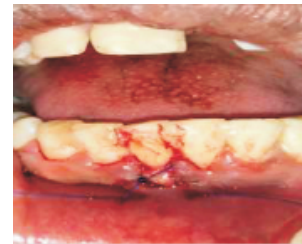
(d) Transfer of Template to donor site



(e) CTG harvested from palate area



(f) Connective Tissue Graft



(g) Graft inserted to recipient area



(h)Gingivopapillarycomplex coronallyadvanced and sutured

### Fig 2-After Surgery



(a) Periodontal pack applied



(b) Donor site sutured



(c) 2 weeks postoperatively



(d) 1 month postoperatively

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