CASE REPORT

# MINIMALLY INVASIVE APPROACH FOR MULTIPLE ROOT COVERAGE USING SUBEPITHELIAL CONNECTIVE TISSUE GRAFT – A CASE REPORT.

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## ABSTRACT

For esthetic/cosmetic demands and root hypersensitivity associated with gingival recession, root coverage or gingival augmentation coronal to recession is a challenging procedure in the field of periodontal plastic surgery. Various techniques used for root coverage procedure with its several important surgical advances in past decades. Subepithelial connective tissue graft with pouch and tunnel technique shows predictable result due to minimal incision and flap reflection, provide abundant blood supply to the donor tissue, and intimate contact of donor tissue to the recipient site. This case report shows the success of pouch and tunnel technique when it is used for multiple root coverage in Miller Class-I and Class-II gingival recession in maxillary esthetic region.

## KEY WORDS

**Gingival recession, root coverage, pouch and tunnel, subepithelial connective tissue graft.**

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## INTRODUCTION

Gingiva, the part of oral mucosa plays pivotal role to maintain the functional and esthetic harmony by its position and architectural form in the periodontium. Gingival recession is defined as root surface exposure to the oral cavity because of the destruction of the marginal gingival tissues and of the connective tissue attachment of one or more teeth[1]. When margin of this periodontal soft tissue displaced apically due to various etiology, can leads to clinical problems such as root surface hypersensitivity, root caries, cervical abrasion, difficult plaque control, and diminished cosmetic appeal. Gingival recession either localized or generalized and its prevalence increase with age[2].

Predictability of the gingival augmentation coronal to recession or root coverage can be enhanced by the presurgical examination and the correlation of the recession by using classification proposed by Miller[3].

**Table 1: Miller's classification of recession-type defects**

| Condition of recession | Success percentage (possible) % |
|---|---|
| **Class I.** Recession does not extend to the mucogingival junction and there is no loss of bone or soft tissue in the interdental area. | 100 |
| **Class II.** Recession extends to or beyond the mucogingival junction with no interdental bone and soft tissue loss. | 100 |
| **Class III.** Recession extends to or beyond the mucogingival junction. There is bone and soft 50 to 70 tissue loss interdentally or malpositioning of the tooth. | 50 to 70 |
| **Class IV.** Recession extends to or beyond the mucogingival junction. There is severe bone 0 to 10 and soft tissue loss interdentally or severe tooth malposition. | 0 to 10 |

 

To correct the functional and esthetic problems associated with gingival recession various techniques for root coverage performed in the field of periodontal plastic surgery which includes –

- Free gingival autograft.[4]
- Free connective tissue autograft.[5]
- Pedicle autografts –
  - Laterally positioned pedicle flap.[6]
  - Coronally positioned flap.[7, 8, 9]
- Sub-epithelial connective tissue graft combined with coronally advanced flap.[10]
- Guided tissue regeneration (GTR).[11]
- Minimally invasive technique:
  - Pouch and tunnel technique.[12]
  - VISTA (vestibular incison subperiosteal tunnel access) technique.[13]
  - Pinhole technique.[14]

To avoid soft tissue harvesting, other surgical procedures using biomaterials or biological factors were developed which includes –

- Enamel matrix-derived proteins (EMD)[15]
- Platelet-rich fibrin (PRF)[16]
- Acellular dermal matrices[17]
- Human fibroblast dermal derivative cells (HF-DDS)[18]

Although different techniques have been tried in the past with varying degree of success, complete root coverage still remains an elusive goal. Sub-epithelial connective tissue graft with coronally advanced flap techniqueshows satisfactory result. In periodontics the sub-epithelial connective tissue graft technique[19] is considered the gold standard for treating gingival recession[20].

## CASE REPORT

A 38 year old non-smoker male patient reported with the complaint of sensitivity in relation to upper anterior teeth. On examination there was Miller's Class Irecession in relation to 12 and Class II recession in relation to 13, 14, and 15 [Figure 1].The distance from CEJ to marginal gingiva was 2 mm in 12, 3 mm in 13, 4 mm in 14 and 15.The width of attached gingiva was found tobe inadequate in the region of 13, 14 and 15. A pouchand tunnel technique utilising palatal connective tissue graftfor root coverage was planned after Phase-I therapy.

## SURGICAL TECHNIQUE:

Prior to administration of local anesthetic solution, the patient rinsed with 15 ml of 0.12% of chlorhexidine gluconate to reduce the bacterial load. After adequate anesthesia surgical procedure is performed. The exposed roots of the recipient tooth was scaled and planed using Gracey curettes. Sulcular incisions are made from mesial to distal line angles of each tooth, except the interdental papilla using #15 blade [Figure 2]. The incision is extended to one adjacent tooth both mesially and distally. Full-thickness pouch and tunnel are created and extended beyond the mucogingival line by blunt dissection. The papilla are kept intact and carefully detached from the underlying bone, which allows coronal advancement of the papilla [Figure 3]. Root biomodification was done using tetracycline

Figure-1

Figure-2

Figure-3

Figure-4

Figure-5

Figure-6

Figure-7

hydrochloride by cotton pellets to remove the smear layer for better connective tissue attachment to the root surface. Connective tissue graft was harvested from palate by trapdoor technique [Figure 4]. After harvesting, graft was inserted into the created pouch through the sulcus. The entire complex (buccal gingiva with intact interdental papilla and underlying connective tissue graft) was coronally advanced using suture anchored using composite material stops placed at the labial surface(temporary) to prevent the collapse of the suspended sutures [Figure 5].The patient was instructed to rinse daily with 10ml of 0.2% chlorhexidine gluconate. Suture was removed after 15 days [Figure 6].

## RESULTS

Healing was satisfactory. Patient was recalled every week for the first one month. Postoperative healing after 3 months was satisfactory which revealed good amount of attached gingiva with acceptable recession coverage [Figure 7]. Adaptation of the edges of the graft to the surroundings and increased colour matching were observed.

## DISCUSSION

Pouch and tunnel is a minimally invasive technique performed for root coverage purpose. The high success rate obtained with this type of graft was related to maintaining of adequate blood supply at the overlying flap and the connective tissue basement. This technique shows more patient comfort with less postoperative complications (bleeding, pain, swelling). The major benefits of subepithelial connective tissue grafting are improved colour matching at the recipient site. The strategy to the pouch and tunnel technique is that it preserves the lateral and the apical blood supply of the flap bye liminating vertical incisions. Tarnow demonstrated that lateral blood supply was more significant than the apical as tissues survived even after severing the apicocoronal blood supply[19]. This suggests vertical releases may compromise the lateral blood supply leading to delay in healing. Thus the advantage of using this technique is the preservation of lateral blood supply and also the intimate contact of the donor tissue to the recipient site. In the present case satisfactory root coverage was achieved with good esthetic results.

## CONCLUSION

The pouch and tunnel technique combines the advantages of subepithelial connective tissue grafting as well as the minimally invasive envelope technique thus making it an better choice for treatment of multiple adjacent gingival recession in a single surgical procedure.

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