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## RESEARCH ARTICLE

# A COMPARATIVE EVALUATION OF ROOT COVERAGE IN CLASS I RECESSION USING AMNION MEMBRANE AND PRF MEMBRANE: A CASE REPORT

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**ABSTRACT**

Root coverage procedures are routinely performed for the treatment of clinically exposed root surfaces of the tooth. The primary aim behind these mucogingival procedures is to place the gingival margin on or as close to cemento-enamel junction as possible. Various biomaterials such as amnion membrane and PRF membrane have been used for purpose of guided tissue regeneration. Both the biomaterials consist of various growth factors and have positive effect on wound healing. In the present case report we have discussed two cases, each treated using coronally advanced flap with either amnion membrane or PRF membrane.



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## INTRODUCTION

Gingival recession is the displacement of gingival margin apical to the cementoenamel junction. There is loss of periodontal connective tissue fibers along with root cementum and alveolar bone. Treatment of gingival recession aims at root coverage and arresting the progression of loss of periodontium (Pini Prato *et al.,* 2000). Various mucogingival surgical techniques with or without use of membranes have been proposed for root coverage. Recent consensus statement describes sub epithelial connective tissue graft based procedures as the most predictable method for root coverage. However, SCTG is associated with limited availability, donor site morbidity and second surgical site (Dimitris *et al.,* 2015).
Recent developments include the use of platelet rich fibrin (PRF) membrane and amnion membrane in root coverage procedures (Choukroun *et al.,* 2006; Gurinsky, 2009). Amnion membrane has been successfully used for the purpose of skin transplantation, reconstruction of the oral cavity, bladder and arthroplasty. Amnion membrane surrounds the amniotic sac and protects embryo. It contains no nerves, muscles or lymphatics. Use of amnion membrane in treatment of gingival recession was first proposed by Gurinsky *et al.,* 2009. However, not enough literature is available on the use of amnion membrane in root coverage procedures.

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PRF membrane consists of platelet derived growth factors as described by Choukroun *et al.,* 2006. It has been widely used in various procedures due to its ability to promote wound healing. PRF membrane has been used with various root coverage procedures with varied success. Some authors have reported improvement in width and thickness of gingiva together with complete root coverage (Chambrone and Tatakis, 2015). However, there is no consensus over the use of PRF membrane in root coverage procedures. Thus, in this case report, we discuss treatment of Miller's class I gingival recession using guided tissue regeneration principles with amnion membrane and PRF membrane.

## CASE 1

A 32 year old patient reported to the opd with chief complaint of sensitivity in his right upper front tooth region. On examination it was revealed that gingival recession was present in respect to tooth # 13. Probing depth was 1mm and clinical attachment loss was 4mm. Width of keratinized gingiva was 1mm. There was no bleeding on probing associated. Root coverage procedure using coronally advanced flap and amnion membrane was planned. After adequate anesthesia at the surgical site was achieved, sulcular incision was given using 15 no BP blade along the labial aspect and was joined with two vertical incisions. A partial thickness flap was elevated and was checked for coronal advancement.

Pre-operative site

Recipient bed prepared

Coronal advancement of flap

Amnion membrane

Placement of amnion membrane

Flap coronally advanced and sutured

3 months post-operative

## CASE 2

Pre-operative site

Horizontal and sulcular incisions given

Partial thickness flap elevated

Platelet rich fibrin (PRF)

Prf membrane prepared

Prf membrane adapted and flap coronally advanced

Direct interdental sutures placed

3 months post-operative

Root surface was debrided and then amnion membrane was placed over the exposed root surface. Partial thickness flap was advanced to cover the CEJ of tooth # 13 and sutured with 4-0 mersilk suture at this level. Sutures were removed after 1 week. Post-surgical instructions were explained to the patient. Periodontal pack was not placed to cover the surgical site. Patient was reviewed after 3 months and 6 months to assess the root coverage achieved. Results at the end of 3 months showed complete root coverage but there was no change in the gingival thickness. The same results were observed at 6 months follow up.

## CASE 2

A 39 year old patient visited the opd with chief complaint of sensitivity in his lower left tooth region. On examination it was revealed that gingival recession was present in respect to tooth # 34. Probing depth was 1 mm and CAL was 3 mm. gingival thickness was measured to be 1 mm. There was no bleeding on probing. Root coverage using coronally advanced flap and PRF membrane was planned. After adequate anesthesia was achieved at the surgical site, sulcular incision was given on the buccal aspect of tooth # 34 and was continued interdentally as horizontal incision. Partial thickness flap was elevated and was checked for coronal advancement. PRF membrane was prepared following the method as described by Choukroun *et al*., 2006. exposed root surface was thoroughly debrided and PRF membrane was placed. Partial thickness flap was advanced till the CEJ and sutured using 4-0 mersilk suture. Sutures were removed after 1 week of surgery. Post-surgical instructions were explained to the patient. Periodontal dressing was not placed over the surgical site. Patient was recalled after 3 months and 6 months to assess the root coverage achieved and to check for changes in the gingival thickness. After 3 months, complete root coverage was achieved at the surgical site but no significant changes in the gingival thickness was observed. Same result was observed after 6 months of treatment.

## DISCUSSION

According to recent consensus report by American association of periodontology, SCTG based mucogingival procedures provide the most successful results in treatment of gingival recession[2]. However, harvesting a connective tissue graft leads to a second surgical site, donor site morbidity and is limited in availability. This has led to development of various different types of membranes to be used in guided tissue regeneration procedures. Amnion contains a variety of specialized proteins such as fibronectin, laminin, proteoglycans, and collagen types IV, V, and VII. It serves as matrix for cellular migration and proliferation. It is non immunogenic in nature (Chopra, 2013). The growth factors and cytokines released by amnion membrane are responsible for its effect on cell proliferation and tissue regeneration. Various growth factors found in amniotic membrane are epidermal growth factor; transforming growth factor-β1; keratinocyte growth factor; beta-fibroblastic growth factor; and hepatocyte growth factor, which act in facilitating cellular migration (Rucha *et al.,* 2014). Platelet rich fibrin acts as a source of growth factors. PDGF-AA and PDGF-BB released from PRF were found to be major mitogens for human periodontal ligament cells, and transforming growth factor (TGF)-1 played a role as a regulator of the mitogenic responses. Since platelet concentrate has a higher number of platelets per milliliter, it is expected to contain a higher concentration of growth factors to accelerate or enhance regeneration (Baiju *et al.,* 2013). Aroca *et al*., have concluded in their study that the coronally advanced flap in association with platelet rich fibrin provided for a better healing and increased gingival thickness at the operative site (Aroca *et al.,* 2010). Pini Prato *et al*., have also proposed that the use of guided tissue membrane provides much better results in terms of recession coverage and patient comfort (Pini Prato *et al.,* 2000). In the present case report, use of both amnion membrane and PRF membrane led to complete root coverage without any complications. However, none of the biomaterials used provided any change in the gingival thickness.

### Conclusion

The two cases presented here illustrate that the platelet rich fibrin membrane and amnion membrane can be more efficient and less invasive approaches to treat Millers's class I gingival recession. In both the cases excellent root coverage was achieved whereas gingival thickness was not affected.

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