

Treatment Of Bilateral Gingival Recession Using Coronally Advanced Flap And Amniotic Membrane On One Side And Coronally Advanced Flap And PRF Membrane On Other Side: A Case Report

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Abstract: Gingival Recession is a common, complex, and unpleasant clinical condition. It is more commonly associated with root hypersensitivity, impaired esthetics and root caries. Successful treatment outcome becomes challenging in such cases. Coronally advanced flap for root coverage is most commonly used technique. Combination of biological membranes derived from human body itself along with coronally advanced flap yields better results. This case report describes a case of bilateral Class I gingival recession treated with amniotic membrane on one side and PRF membrane along with Coronally advanced flap on other side. [Gandhi R Natl J Integr Res Med, 2021; 12(4): 73-78]

Key Words: Gingival Recession, Amniotic Membrane, Platelet Rich Fibrin Membrane, Coronally Advanced Flap

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Introduction Gingival recession is defined as the apical displacement of the gingival margin in relation to the cemento-enamel junction¹. Precipitating factors for gingival recession include aggressive tooth brushing, plaque induced inflammation, smoking, orthodontic treatment, subgingival restorations². Predisposing factors for gingival recession include bone dehiscence, tooth malposition, thin tissue, inadequate keratinized gingiva, frenal pull². Miller classified gingival recession based on severity where 100% root coverage is expected for class I and class II³.

Various surgical modalities have been employed for the treatment of gingival recession including Subepithelial connective tissue graft⁴, Free gingival graft⁵, Coronally advanced flap⁶. Several regenerative materials including Alloderm, Platelet rich fibrin, Amniotic membrane and Enamel matrix derivatives have been incorporated for better results.

Coronally advanced flap is widely used for the treatment of gingival recession. Its success rate varies between 9- 95%⁷. Data suggests unstable long term results using CAF alone⁸. Also the gain in apico- coronal dimension of keratinized tissue is an important parameter in prevention of recurrence of gingival recession. Amnion is an allograft derived from human tissue with many

unique properties that makes it a promising new substitute in the field of periodontics. It contains a variety of specialized proteins such as fibronectin, laminin, proteoglycans, glycosaminoglycans and collagen type IV, V and VII and also enhances the wound healing process⁹. Its wound modulating properties make it an interesting new option for application in oral wound healing and periodontal surgical therapy¹⁰.

Platelet- rich fibrin (PRF) is a second generation platelet concentrate developed by Choukroun et al derived from centrifuged blood. It consists of a fibrin3-D polymerized matrix in a specific structure, with the incorporation of platelets, leukocytes, growth factors and presence of circulating stem cells, and does not requires donor site preparation. These growth factors present in PRF are involved in wound healing and are postulated as promoters of tissue regeneration¹¹. This case report presents bilateral gingival recession treated with a Coronally Advanced Flap + Amniotic membrane on one side and Coronally Advanced Flap + PRF membrane on the other side.

Case Report: A 35 year old male patient came to the department of Periodontology with the chief complaint of unpleasant aesthetics since 6 months. On intraoral examination, Miller's Class I recession was found in relation to maxillary left

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and right canines. Scaling and root planing was done and proper brushing technique was advised. Surgical procedure was explained to the patient and informed consent was obtained.

Surgical Procedure For Site 1, Coronally Advanced Flap + Amniotic Membrane (Fig 1): The operative site w.r.t.23 was disinfected with 2% betadine. It was then anesthetized with 2 % lignocaine hydrochloride with epinephrine (1:80,000). Two horizontal incisions were made at right angles to the adjacent interdental papillae of canine, without interfering with the gingival margin of the neighbouring teeth at the level of the CEJ. Following this, a crevicular incision was given.

Two oblique vertical releasing incisions were given extending beyond the MGJ and a trapezoidal mucoperiosteal flap was reflected.

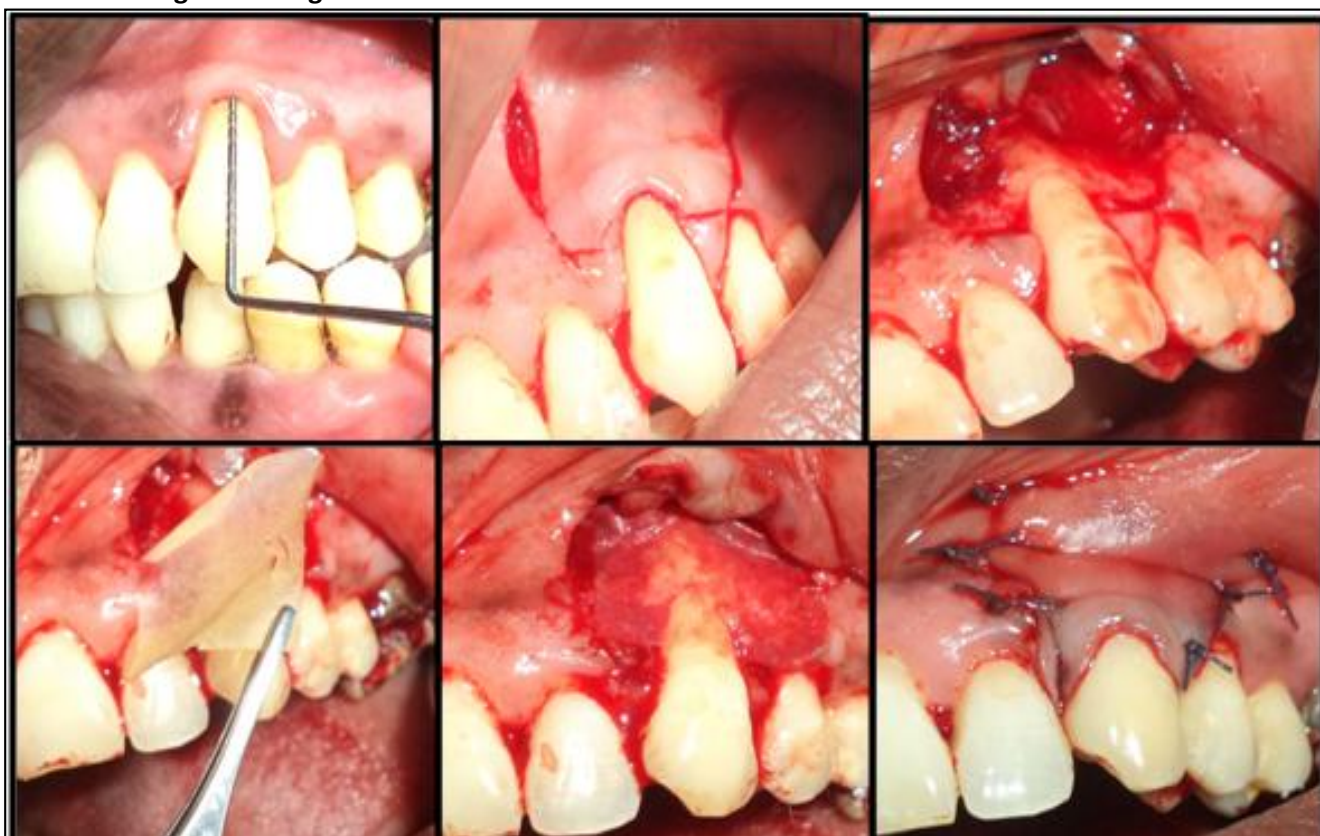
This was followed by split thickness flap from MGJ apically in order to release the tension & to favour the coronal positioning of flap. The

adjacent papillae were de-epithelialized. The root surface was planned with curettes and irrigated with saline.

The processed dehydrated amnion allograft was placed onto the exposed root surface and proximal bone with the embossed side facing away from the root surface. Upon placement, amnion allograft became hydrated and self-adhered to the exposed root surface and proximal bone, thus eliminating the need for suturing the graft.

Immediately after the placement of the membrane, the reflected flap was coronally advanced over the amnion allograft. Reflected flap was then secured with sling sutures and interrupted sutures were used to secure the releasing incisions. Care was taken not to move the allograft after placement and during flap closure. A tin foil and periodontal dressing were placed over the surgical area.

Figure 1: Surgical Procedure For CAF + Amniotic Membrane Placement w.r.t. 23



Post Surgical Care: Patient was instructed to discontinue toothbrushing around the surgical site for the first 14 days after surgery. During this period, patient was prescribed 0.2%

chlorhexidine mouthwash twice a day as oral hygiene maintenance (plaque control). Diclofenac 100 mg twice a day for 3 days was also given to control postoperative pain along with

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systemic antibiotic (amoxicillin, 500 mg, t.i.d.) for 7 days. Suture removal was carried out after 2 weeks.

Surgical Procedure For Site 2, Coronally Advanced Flap + PRF Membrane (Fig 2): A similar surgical procedure was followed on the site 13. 10 ml of blood was collected in a test tube and centrifuged at 3000 rpm for 10 minutes. The resultant product consisted of the following three

layers: The topmost layer consisted of acellular Platelet Poor Plasma (PPP), a PRF clot in the middle, and red blood cells at the bottom. The obtained PRF clot was separated from the RBC. The PRF membrane was prepared by squeezing it.

The membrane was then placed over the defect site. The flap was advanced coronally and sutured. Similar postoperative instructions were given as those with site 1.

Figure 2: Surgical Procedure For CAF + PRF Membrane Placement w.r.t. 13



Post Surgical Care: Similar postoperative instructions were given as in site 1.

Results: The 6 month follow up showed complete root coverage in both maxillary right and left

canines. There was also an increase in the biotype of gingiva. There was no scar formation at the operative site and colour match was excellent (Fig: 3 and Fig: 4).

Figure 3: Preoperative and 6months Postoperative w.r.t. 23 (CAF+AM)



Figure 4: Preoperative And 6 Months Postoperative w.r.t. 13 (CAF+PRF)



Discussion: Amniotic membrane develops from extra-embryonic tissue consisting of a foetal component (the chorionic plate) and a maternal component (the deciduas)¹⁰. AM is applied after being banked in a glycerol-preserved, Dimethylsulphoxide (DMSO) preserved or freeze-dried and irradiated state. Its pain-reducing, antimicrobial, mechanical, and side-dependent adhesive or anti-adhesive properties makes its use inevitable¹².

It contains a large number of cytokines including transforming growth factor- β/α , vascular endothelial growth factor, epidermal growth factor, platelet- derived growth factor- β/α and fibroblast growth factor. It has been reported to be nonimmunogenic, to reduce inflammation, reduces scar tissue, has antibacterial properties, reduces pain at the site of application and acts as a natural biological barrier. Such wound modulating properties make it an interesting new option for application in oral wound healing and periodontal surgical therapy¹⁰. Also the self-adherent nature of the amnion allograft significantly reduces surgical time by eliminating the need for suture techniques and makes the procedure easier to perform, relative to techniques involving the use of autograft or allograft dermis tissue.

Niknejad et al¹⁰ studied the properties of the AM for potential use in tissue engineering. They showed that the AM is considered an important potential source for scaffolding material.

Epithelial cells derived from the AM have the advantages of stem cells, yet are a more suitable source of cells for tissue engineering than stem cells. The AM has other biological properties important for tissue engineering, including anti-inflammatory, anti-microbial, anti-fibrosis, anti-

scarring, as well as reasonable mechanical property and low immunogenicity.

Brian Gurinsky¹³ did a five patient observational case series, wherein he used novel allograft composed of amnion tissue in the treatment of shallow-to-moderate recession defects. He concluded that processed dehydrated allograft amnion may provide an effective alternative to autograft tissue in the treatment of shallow to-moderate Miller Class I and II recession defects.

Shah et al¹⁴ reported case, wherein amnion allograft was used in the treatment of gingival recession. 100% root coverage and an excellent color match to the recipient site were observed with this material. Also the enhancement of gingival biotype (from initial thin to thick) was seen.

Sharma and Yadav¹⁵ conducted an observational case series wherein they evaluated the effectiveness, predictability and the use of a novel material AM in the treatment of shallow to moderate isolated recession defects. They concluded that autogenous graft tissue procurement significantly increases patient morbidity which also lengthens the duration of surgery in placing the graft, while self adherent nature of AM significantly reduces surgical time and makes the procedure easier to perform, making it membrane of choice.

PRF is also a novel treatment option available for various mucogingival defects. The best part of PRF is acquirement of optimal esthetic results with excellent soft tissue contour and texture. It affects cellular activities at genetic and cellular levels^{16,17}. Platelet concentrate contains platelet derived growth factor, transforming growth factor and many other unidentified growth

factors that modulate and upregulate one growth factors function in the presence of second or third growth factor. These growth factors are involved in wound healing and are postulated as promoters of tissue regeneration^{18,19}. Thus PRF is considered as a healing biomaterial and is commonly used in implant and periodontal plastic surgery.

Aroca S. et al²⁰ conducted a clinical study to determine the effectiveness of PRF clot to a modified coronally advanced flap (MCAF) as compared to an MCAF alone for the treatment of multiple gingival recessions. He concluded that the addition of PRF membrane positioned under the MCAF provided inferior root coverage but an additional gain in gingival/mucosal thickness at 6 months compared to conventional therapy.

Jankovic S. et al²¹ conducted a clinical study to evaluate the clinical effectiveness of PRF membrane used in combination with a coronally advanced flap and to compare it with the use of an enamel matrix derivative in combination with a coronally advanced flap in gingival recession treatment. The results of the study demonstrated that the PRF group showed 65% of the root coverage, compared to the enamel matrix derivative group which showed only 60% of the root coverage.

Padma et al²² conducted a clinical study to evaluate the additional benefits of PRF when used along with coronally advanced flap (CAF) for root coverage procedures. Study results showed that addition of PRF membrane with CAF provided superior root coverage with additional benefits of gain in CAL and WKG at 6 months postoperatively.

Thamaraiselvan et al²³ conducted a study on PRF membrane along with CAF in the treatment of isolated gingival recession. They concluded that the addition of PRF to CAF provided no added advantage in terms of root coverage except for an increase in gingival thickness.

Shetty et al²⁴ reported a case, wherein a bilaterally occurring multiple Millers class I recession was managed by using PRF and AM. The clinical outcome of the surgical procedure accounted for 100% root coverage, an enhanced gingival biotype, with both the membranes.

The 6 month follow up result of the present case showed a reduction in the recession depth, gain in clinical attachment level, increase in width of keratinized gingiva and an enhanced biotype of gingiva.

Conclusion: Root coverage is a successful and predictable procedure in periodontics, employing a variety of techniques. This is an area of rapid change and new techniques are constantly being reported. Connective tissue graft procedures are the most extensively documented procedures. The use of the AM as an additive material alternate to subepithelial connective tissue in reducing the need for a second surgical site is advocated. PRF being an autologous material provides an additional advantage of earlier healing and quicker attainment of optimal gingival tissue thickness. However, further testing is needed to confirm their long-term stability.

References:

1. The American Academy of Periodontology. Glossary of Periodontal Terms, 4th Ed Chicago 2001.
2. Chan HL, Chun YH, MacEachern M, Oates TW. Does gingival recession require surgical treatment? Dent Clin North Am. 2015;59:981–996.
3. Miller PD Jr. Root coverage using the free soft tissue autograft following citric acid application. III. A successful and predictable procedure in areas of deep-wide recession. Int J Periodontics Restorative Dent. 1985;5:14–37.
4. Langer B and Langer L. Sub epithelial connective tissue graft technique for root coverage. J Periodontol. 1985; 56:715-720.
5. Miller PD. Root coverage using the free tissue auto graft citric acid application. III. A successful and predictable procedure in deep wide recession. Int J Periodontics Restorative Dent. 1985;5:15-37.
6. Harris, R.J. and Harris, A.W. The coronally positioned pedicle graft with inlaid margins: A predictable method of obtaining root coverage of shallow defects. Int J Periodontics Restorative Dent. 1995; 14:229-241.
7. Wennstrom JL, Pini Prato GP: Mucogingival therapy periodontal plastic surgery. In: Clinical Periodontology and implant dentistry. J Lindhe, N P Lang, T Karring, Eds; 4th Edn.; Blackwell Publication, Munksgaard, 2003; pp576-649.

8. McGuire MK, Cochran DL. Evaluation of human recession defects treated with coronally advanced flaps and either enamel matrix derivative or connective tissue. Part 2. Histologic evaluation. *J Periodontol.* 2003; 74: 1126-1135.
9. Fetterolf DE, Snyder RJ. Scientific and clinical support for the use of dehydrated amniotic membrane in wound management. *Wounds.* 2012; 24: 299-307.
10. Niknejad H, Peirovi H, Jorjani M, Ahmadiani A, Ghanavi J, Seifalian AM. Properties of the amniotic membrane for potential use in tissue engineering. *Eur Cell Mater.* 2008; 15: 88-99.
11. Dohan DM, Choukroun J, Diss A, Dohan SL, Dohan AJ, Mouhyi J, Gogly B. Platelet-rich fibrin (PRF): a second-generation platelet concentrate. Part II:- related biologic features. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2006; 101: e45-50.
12. Velez I, Parker WB, Siegel MA and Hernandez M. Cryopreserved amniotic membrane for modulation of periodontal soft tissue healing: a pilot study. *J periodontol.* 2010; 81: 1797-804.
13. Gurinsky B. A novel dehydrated amnion allograft for use in the treatment of gingival recession: An observational case series. *The Journal of Implant & Advanced Clinical Dentistry.* 2009; 1.
14. Shah R, Sowmya NK, Mehta DS. Amnion membrane for coverage of gingival recession: A novel application: *Contemp Clin Dent.* 2014; 5: 293- 295
15. Sharma A, Yadav K. Amniotic membrane A Novel material for the root coverage: A case series. *J Indian Soc Periodontol.* 2015; 19: 444-448.
16. Ito K, Owa M. Connective tissue grafting for root coverage in multiple Class III gingival recessions with enamel matrix derivative: A case report. *Pract Periodontics Aesthet Dent* 2000; 12: 441-446.
17. Ito K, Akutagawa H. Periosteal connective tissue grafting or root coverage with enamel matrix derivative: A case report. *J Esthet Restor Dent.* 2001; 13: 172-178.
18. Griffin TJ, Cheung WS. Treatment of gingival recession with a platelet concentrate graft: A report of two cases. *Int J Periodont Restorat Dent.* 2004; 24: 589-595.
19. Gonshor A. Technique for producing platelet-rich plasma and platelet concentrate: Background and process. *Int J Periodont Restorat Dent.* 2002; 22: 547-557.
20. Aroca S, Keglevich T, Barbieri B, Istvan G, Etienne D. Clinical evaluation of a modified coronally advanced flap alone or in combination with a platelet rich fibrin membrane for the treatment of adjacent multiple gingival recession: A 6 month study. *J Periodontol.* 2009; 80: 244-252.
21. Jankovic S, Aleksic T, Milinkovic S, Dimitrijevic B. The coronally advanced flap in combination with platelet rich fibrin and enamel matrix derivative in the treatment of gingival recession: A comparative study. *Eur J Esthet Dent.* 2010; 5: 260-273.
22. Rajan P, Ande S, Pavaluri AK, Meganderao N, Kumar C, Annaji S. A split mouth randomized controlled study to evaluate the adjunctive effect of platelet rich fibrin to coronally advanced flap in Miller's class I and II recession defects. *J Indian Soc. Periodontol.* 2013; 17: 631-636.
23. Thamaraiselvan M, Elavarasu S, Thangakumaran S, Gadagi JS, Thangavelu A. Comparative clinical evaluation of coronally advanced flap with or without platelet rich fibrin membrane in the treatment of isolated gingival recession. *J Indian Soc. Periodontol.* 2015; 19: 66-71.
24. Shetty SS, Chatterjee A, Bose S. Bilateral Multiple Recession Coverage with Platelet-Rich Fibrin in Comparison with Amniotic Membrane. *J Indian Soc. Periodontol.* 2014; 18: 102-106.

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