



A Split Mouth Gingival Recession Coverage By Coronally Advanced Flap With Non-Pedicled Buccal Fat Pad (Npbf) And Platelet Rich Fibrin (Prf) Membrane: A Case Report

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Abstract

Treatment Gingival recession is always a challenge for clinicians to obtain better root coverage. The aim of this study was to compare the effectiveness of Non-pedicled buccal fat pad (NPBFP) versus platelet rich fibrin (PRF) in treatment of Miller class I gingival recession using coronally advanced flap technique (CAF).

Case Report: This case report showing two cases of root coverage in a patient with a split mouth design. One side root coverage was performed with non-pedicled buccal fat pad(NPBFP) and another side PRF membrane was used with coronally advanced technique(CAF). In both groups, all clinical parameters were recorded from the pre-operative period to 3-month follow-up period.

Result: In the comparison between the two groups after 3-month follow-up period, there was no statistically significant difference between the two groups regarding all clinical parameters except the percentage of root coverage; there was a significant increase in the percentage of root coverage after 3-month follow-up period in NPBFP Treated Side.

Conclusion: Both PRF membrane and NPBFP are effective in the management of Class I gingival recession defects using CAF technique. NPBFP group shows better results regarding the percentage of root coverage than PRF group after 3-follow-up.

Keywords: Gingival recession, Coronally advanced flap (CAF), Platelet rich fibrin (PRF), Root coverage, non-pedicled buccal fat pad (NPBFP), Gingival recession depth (GRD), Clinical attachment level (CAL), Keratinized tissue width (KTW)

Introduction

Gingival recession (GR) is defined as apical migration of gingival margin (GM) beyond the cemento-enamel junction (CEJ) (AAP,2001) [1] and it may lead to dentinal hypersensitivity, root caries, aesthetic impairment etc. So, the treatment of gingival recession is very essential and also challenging to the clinicians. But the success of root coverage treatment depends on various other factors

such as amount of the keratinized gingiva, root prominence, frenum full is there or not, type of gingival biotype etc. Different root coverage techniques are coronally advanced flap, lateral pedicled flap, double papilla flap etc.

Coronally advanced flap (CAF) is considered as one of the successful root coverage procedures for treating gingival recession.[4] But CAF alone is less

optimal technique to achieve the root coverage if the gingival recession is due to thin gingival biotype. So, to increase the predictability of root coverage, CAF will be combined with any other adjunctive material such as connective tissue graft (CTG), acellular dermal matrix (ADM), enamel matrix derivative (EMD), platelet rich fibrin membrane (PRF), non-pedicated buccal fat pad (NPBFP) etc. In this case report showing two cases with split mouth design where one side root coverage was treated using

coronally advanced flap (CAF) with non-pedicated buccal fat pad (NPBFP) and another side CAF combined with platelet rich fibrin (PRF) membrane.

Case Report:

A 27 yrs old systemically healthy male patient attend the OPD of Department of Periodontology of Dr R Ahmed Dental College and Hospital with bilateral Miller’s class-I gingival recession in maxillary canine region.

On examination the following measurements are found,

BASELINE	LEFT CANINE	RIGHT CANINE
Width of keratinized tissue (KTW)	4mm	3mm
Gingival recession depth (GRD)	4mm	5mm
Clinical attachment level (CAL)	5mm	6mm

During visual examination, it is also found that gingival biotype is thin. Prior to the surgical procedure, the whole procedure should be explained to the patient and a written consent has been taken from the patient. Firstly, full mouth phase-I therapy was performed and oral hygiene instruction given to the patient. Root coverage surgery was planned to be performed 2wks after phase-I therapy. Before surgical intervention, operative site was anesthetized using 2% lignocaine with adrenalin. Triangular incision is given in both the side with No. 15c BP blade and split full split flap was raised in both the side.[10] After that, root planning was performed followed by root surface biomodification with 17% EDTA (Ethylenediamine tetra acetic acid).[3]

In right side (Fig.1), after preparation of the recipient bed non-pedicated buccal fat pad (NPBFP) was harvested from the donor site. A 1.5cm horizontal incision was given at the bottom of the vestibule with No.15 BP blade below the maxillary second molar region and a curve haemostat was introduced to repositioning the muscles temporarily to exposure the buccal fat pad and cut it out with a pair of sharp scissors and placed it over the prepared recipient bed. Patient check was then compressed to promote the closure of the edge of the wound and sutured it immediately.[2]

In left side (Fig.2), PRF membrane was placed over the prepared recipient site and this membrane has been prepared from the patient’s own blood. Here,10ml blood has been taken from patient venous site mainly antecubital vein) in a proper aseptic technique and immediately transfer it in two PRF machine. After that, this two PRF tubes are placed inside a centrifugation machine and centrifuged it at 3000 rpm for 10 min. (Choukroun protocol). After centrifugation, the platelet and leucocyte site rich white part are separated from the RBC part. PRF membrane was prepared with the help of PRF box and placed it over the prepared expose root surface.[7]

In both the side, flap should be placed 1-2mm coronal to the CEJ. and sutured it with 5-0 nonabsorbable suture. Routine postoperative instructions were given to the patient. Patient is instructed to use 0.2% mouth rinse for twice daily for next 2wks and devoid of brushing the operative area for 2wks.The sutures were removed from the site after 14 day from the day of surgery. After this period, the patients were instructed to brush their teeth gently, with a soft-bristled toothbrush. Patient was followed up after 3 months and measured all the clinical parameter (GRD, CAL, PD, GT etc) at this time.



Fig.1(A-I) Root coverage using coronally advanced flap(CAF) with non-pedicated buccal fat pad (NPBFP),A) Gingival recession depth(GRD) measurement , B) Triangular incision given ,C) Split full split flap raised and root planning, D) Non-pedicated buccal fat pad harvested from donor site, E) Buccal fat, F) Non-pedicated buccal fat pad placed over the recipient site, G) Coronal advancement of the flap and sutured it, H)Post-op after 10days, I)Post-op after 3 months.

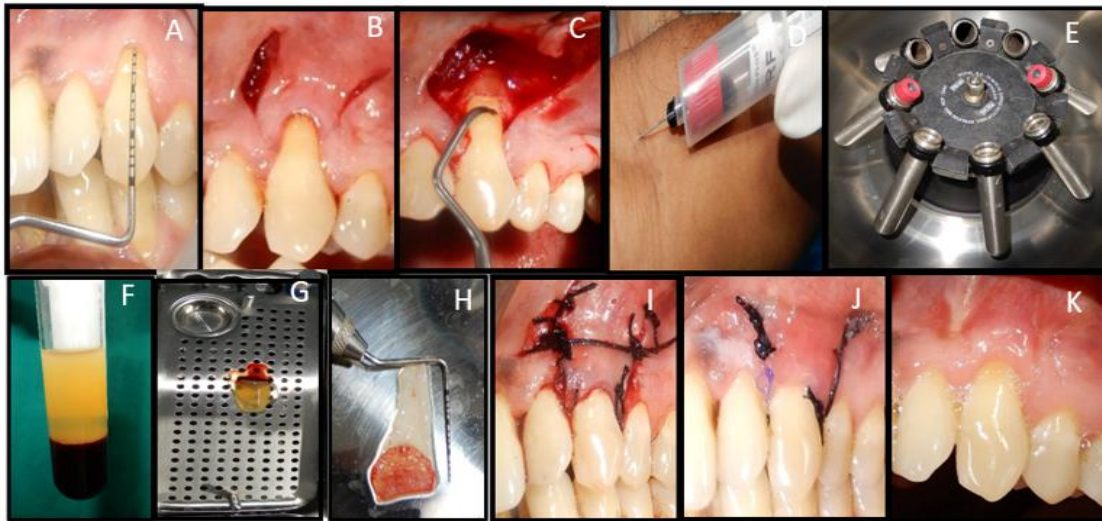


Fig.2 (A-K) Root coverage using coronally advanced flap(CAF) with Platelet rich fibrin (PRF) membrane A) GRD measurement, B) triangular incision given, C) Split full split flap raised and root planning, D) Blood collection in PRF membrane ,E) PRF transferred into centrifugation machine, F)PRF clot, G)PRF box, H) PRF membrane, I)Suture given, J) 10 days post-op, K) 3 months post-op

Results:

After 3 months follow up, GRD and CAL are 0mm and 1mm respectively in case of right side (Table.1) and 2mm and 3mm respectively in case of left side (Table.2).

RT SIDE	GRD	CAL
BASELINE	5mm	6mm
3 MONTHS POST-OP	0mm	1mm

TABLE.1 REPRESENTS RESULTS OF CORONALLY ADVANCED FLAP WITH NON-PEDICLED BUCCAL FAT PAD(NPBFP)

LT SIDE	GRD	CAL
BASELINE	4 mm	5 mm
3 MONTHS POST-OP	3 mm	3 mm

TABLE.2 REPRESENTS RESULTS OF CORONALLY ADVANCED FLAP WITH PRF MEMBRANE

Discussion:

Coronally advanced flap (CAF) with connective tissue graft (CTG) is always considered as a gold standard technique for root coverage surgery. But connective tissue graft technique has some disadvantages such as high donor site morbidity, pronounced post operative complication etc. But it provides better root coverage, more gaining in clinical attachment level and increase keratinized tissue width as well as thickness.^[8] Different alternative adjunctive graft materials such as enamel matrix derivatives (EMD), acellular dermal matrix (ADM), human amniotic membrane (HAM), non-pedicled buccal fat pad (NPBFP), platelet rich fibrin (PRF) membrane is applied in the treatment of gingival recession to avoid the postoperative donor site complication and at the same time to achieve better root coverage.

Non-pedicled buccal fat pad (NPBFP) can be used as a good alternative to the connective tissue graft. In one study by Pyo *et al* (2006) proved the presence of stem cells in buccal fat pad. This adipose tissue derived stem cells (ADSCs) have become the most popular type of adult stem cells for studies in the fields of soft tissue engineering and regenerative medicine. Non-pedicled buccal fat pad can be successfully used in treatment of gingival recession with less donor site morbidity and postoperative complication. In 2015, Deliberator *et al.* conducted a split-mouth randomized controlled trial to analyse the transplant efficiency of a non-pedicled buccal fat pad graft for the treatment of Miller Class I and Class II gingival recessions and compared the results with those of a subepithelial connective tissue graft.^[5] Moreover, NPBFP is shapeless tissue, so the proper measurement of recipient bed is not required. Histologically, the NPBFP epithelialize within 4–6 weeks, and it has been documented that the fat cells are completely replaced with relatively acellular fibrous tissue and covered by stratified squamous epithelium.^[9]

On the other hand, Platelet rich fibrin membrane is an autogenous graft material which is made from patient’s own blood and also used as a successful root coverage material. This PRF membrane basically consists of a fibrin 3-D polymerized matrix in a specific structure, with the incorporation of platelets, leukocytes, growth factors, and the presence of circulating stem cells.^[8] In 2009, a randomized clinical trial by Dohan *et al* reported that an inferior root coverage of about 80.7% at the test site (CAF + PRF) as compared to about 91.5% achieved at the control site (CAF), but it was an additional gain in gingival/ mucosal thickness compared to conventional therapy.^[7] Diversity of these findings may be explained with different PRF characteristics which are affected by preparation methods, application models and concentration of GFs (FGF, IGF-1, EDGF etc).^[6] In the same year, Aroca *et al* reported that an increase in thickness of the keratinized tissues might contribute to a long-term stable clinical outcome with reduced probability of the recurrence. In this present study, it was found that both NPBFP and PRF membrane provide predictable root coverage after 1 month follow up. But after 3 months follow up non-pedicled buccal fat pad treated site provide slightly better root coverage.

Conclusion:

Root coverage is a successful and predictable procedure in periodontics with a variety of techniques. Coronally advanced flap (CAF) with subepithelial connective tissue graft (SCTG) procedures are the gold standard technique of root coverage procedures.^[11] Newer techniques allow root coverage without the use of a palatal donor tissue. From this present study, it was concluded that the use of a non-pedicled buccal fat pad and PRF membrane can be considered a predictable alternative, as no significant statistical differences were observed between the two techniques with respect to the aesthetic results, gain in clinical attachment level, gain in keratinized tissue, and root coverage; thus,

both therapies were considered to be clinically successful. NPBF and PRF are used as an alternative graft material with CAF technique in root coverage procedures and it can easily avoid the donor site morbidity and postoperative complication. A long term follow up will help to predict the appropriate root coverage biomaterial. So, further study with these two biomaterials in a long term follow up is required to predict the successful and stable root coverage procedure.

Conflicts Of Interest:

This research was conducted by the investigators who independently performed all phases of the study, including protocol development, clinical procedures, data analysis, result interpretation and reporting.

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