

Platelet rich fibrin with bridge flap – An effective treatment for multiple gingival recession – Case report

Monika Singh¹, Ruchi Srivastava^{2,*}, Rajesh Jhingran³, Vivek Kumar Bains⁴, Pushpendra Kumar Verma⁵

^{1,2,3,4}Dept. of Periodontology, ⁵Dept. of Conservative Dentistry & Endodontics, Saraswati Dental College, Lucknow, Uttar Pradesh

***Corresponding Author:**

Email: druchi117@gmail.com

Abstract

Esthetic concerns are usually the reason to perform perio-plastic procedures. The main goal of periodontal regenerative and reconstructive therapy is the restoration of health, function, and esthetics, which often requires correction of gingival recession defects within the esthetic zone. The coverage of denuded roots presents one of the challenges of periodontal treatment. Presently there are numerous of periodontal plastic procedures available to manage such problem. Bridge flap technique is one such surgical procedure, which provides root coverage at one stage. To improve the clinical outcome of such surgical procedures, several regenerative materials have been combined with it. Platelet Rich Fibrin (PRF) is one of the best regenerative materials and is being used now-a-days along with the periodontal plastic surgical procedures. The following case presents a cost-effective single-step technique to correct multiple gingival recession at the same time with bridge flap technique combined with PRF. The additive advantage of PRF, having a regenerative potential provided predictable root coverage with improved esthetic results.

Keywords: Bridge Flap, Multiple gingival recession, Platelet Rich Fibrin, Root coverage, Vestibular deepening

Introduction

Mucogingival problems include gingival recession, shallow vestibule, inadequate width of attached gingiva and aberrant frenum.^[1] Amongst these recession is of most concern for esthetics. The etiology of gingival recession is multifactorial and may include inflammatory periodontal disease, mechanical trauma from tooth brushing, occlusal trauma, high frenal attachment, tooth malposition or root prominence leading to the thinning of bony plate, orthodontic tooth movement, thin gingival biotype and iatrogenic factors.^[2] The management of gingival recession is based on a thorough assessment of the etiological factors and the amount of tissue involvement. The initial part of the management of gingival recession should be to rule out or identify any occlusal etiology that may be a contributing factor to the progression of the recession. Various surgical procedures have been established for root coverage of the denuded roots.^[3,4] Coronally advanced flap is one of the common procedures for root coverage in multiple teeth. Raetzke described the envelope technique to place the connective tissue graft (CTG) without the vertical incisions required in a coronally positioned graft.^[5] Zabalegui et al, were the first to combine these techniques in the treatment of multiple adjacent gingival recession defects through the use of a mucosal partial-thickness “tunnel,” spanning multiple teeth, to introduce the CTG.^[6] But all these procedures have a common requirement of adequate width of attached gingiva. In few cases where inadequate width of attached gingiva is present, a first step surgery to increase the width of attached gingiva is performed prior to root coverage procedures. Since then many

innovations have been made to obtain higher success rate of root coverage, by combining different procedures.^[7,8] Margaff E, proposed bridge flap technique to cover multiple gingival recession.^[9] In the present case report, two surgical procedures are combined in a single technique – Bridge Flap technique, to cover multiple recessions in facial aspect of lower anterior teeth and simultaneously to increase the width of attached gingiva by vestibular deepening, along with an additive advantage of Platelet Rich Fibrin (PRF) to increase the gingival thickness and to restore the gingival health.

Case Report

A 38-year-old male patient was referred to the Department of Periodontology at Saraswati Dental College, Lucknow with a chief complaint of receding gums. The patient had a Miller’s Class II recession defects on the mandibular anterior teeth. The distance from CEJ to marginal gingiva in relation to 31, 32, 41, 42, region along with a shallow vestibule was 3 mm (Fig. 1a). The clinical probing depth was 1 mm in all these teeth. Any etiology that may contribute for the progression of recession was identified and ruled out. Also, instructions for proper tooth brushing and oral hygiene were given to ensure maintenance before, during, and after therapy. The procedure was explained to the patient, and informed consent was obtained from him. A root coverage surgery with bridge flap technique, utilizing PRF membrane was planned after re-evaluation of Phase I therapy (after 4 weeks). Immediately before the procedure, the patient rinsed for two minutes with a 0.2% chlorhexidine digluconate solution. After local anesthesia with 2% lignocaine

hydrochloric acid (1:200,000 adrenaline), sulcular incisions were given from 33 to 43 recession defect and a split-thickness flap was elevated in the apicocoronal direction with a Bard-Parker No. 15 blade. Then an incision into the periosteum was placed at its base, joining it with the sulcular incisions and the bone was exposed so that scar formation can take place. The split-thickness flap was raised without any vertical incisions, which extended apically beyond the mucogingival junction (Fig. 1b). Following flap elevation, the exposed root surface was thoroughly planed with a curette. Root planing was carried out until the root surfaces were smooth to reduce the convexity and to create an optimal surface onto which the reattachment, repair, or regeneration will take place. Then PRF membrane was placed and the bridge flap was coronally placed and sutured using 4-0 silk suture (Fig. 1c, 1d and

2a). Coe-pak periodontal dressing was applied at the surgical site (Fig. 2b). Postsurgical instructions were given and the patient was placed on amoxicillin 500 mg 3 times per day for 7 days and aceclofenac 100 mg 2 times per day for 5 days. Chlorhexidine digluconate 0.2% twice a day was prescribed as means of chemical plaque control for 4 weeks. The patient was asked not to chew or brush the surgical area for the first four weeks after the procedure. Ten days after surgery, the periodontal dressing and sutures were removed and the surgical area was carefully irrigated with 0.2% chlorhexidine solution. Significant root coverage was obtained without any post-operative morbidity (Fig. 2c). The oral hygiene instructions were re-inforced. After 3 months follow-up examination revealed acceptable and stable root surface coverage (Fig. 2d).

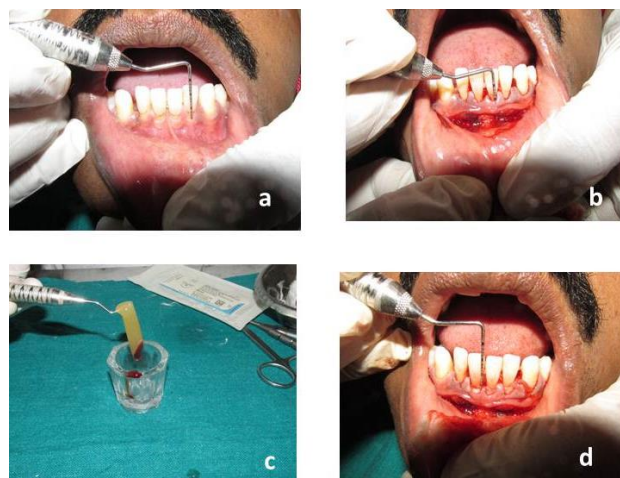


Fig. 1: (a) Preoperative recession, (b) Bridge Flap, (c) Platelet Rich Fibrin (PRF), (d) PRF membrane placed in Bridge Flap



Fig. 2: (a) Sutures placed, (b) Periodontal dressing placed, (c) 10 days postoperative, (d) 3 months postoperative

Discussion

Gingival recession is defined as exposure of the root surface caused by an apical shift of the gingival margin. Gingival recession generally occur without any symptoms, but it can give rise to patients' concern about poor esthetics, dentine hypersensitivity, loss of the tooth, root caries and inability to perform oral hygiene procedures.^[10]

An early diagnosis and treatment of such problems should be undertaken to stop the progressive recession process and to facilitate plaque control in the affected area. Recently, the preparation of platelet-rich fibrin (PRF), which is a concentrated suspension of the growth factors found in platelets is being widely used. The growth factors promote of tissue regeneration.^[11] In 1974, platelets regenerative potentiality was introduced, and Ross *et al.* were first to describe a growth factor from platelets.^[12] After activation of the platelets which are trapped within fibrin matrix, growth factors released and stimulate the mitogenic response in the bone periosteum during normal wound healing for repair of the bone. Choukroun and his associates were amongst the pioneers for using PRF protocol in oral and maxillofacial surgery to improve bone healing.^[13] With this concept, in the present case we have used Platelet rich fibrin (PRF) with bridge flap technique. Here PRF served as a resorbable membrane in which platelet cytokines, growth factors, and cells are trapped and may be released after a certain time. The bridge flap technique is one of the innovations that have been evolved for mucogingival surgeries, especially in flap design. In this case, coronally advanced flap with PRF membrane, was used for root coverage of multiple recession defect along with vestibular deepening with Edlan and Mejchar technique, where the alveolar bone is exposed for scar formation.^[14] The presence of an adequate zone of the gingiva is considered to be critical for the maintenance of gingival health and for prevention of loss of connective tissue attachment. Thus this technique is ideal to cover multiple recessions in patients with inadequate attached gingiva apical to recession. The main advantage of this technique is that it doesn't require a second surgical site as in free soft tissue grafting procedures or a separate frenectomy procedure. In this procedure, the flap covering the exposed root surface is supplied by plasmatic circulation from capillaries from the adjacent gingiva.^[15] In addition, instructions for proper tooth brushing and oral hygiene maintenance must be undertaken before, during, and after therapy to ensure that any periodontal plastic procedures undertaken will not be traumatized by the patient's oral hygiene regimen.

Conclusion

Management of gingival recessions is one of the most challenging tasks in periodontal treatment. The addition of PRF to Bridge Flap procedure provided complete root coverage. Thus the Bridge flap technique is optimal for predictable root coverage for multiple teeth, which simultaneously increases the width of attached gingiva and vascularity of the flap is maintained at the surgical site.

References

1. Verma PK, Srivastava R, Chaturvedi TP, Gupta KK. Root coverage with bridge flap - Case Report. *J Indian Soc Periodontol* 2013;17:120-123.
2. Pai JBS, Rajan SN, Padma R, Suragimath G, Annaji S, Kamath VK. Modified semilunar coronally advanced flap: A case series. *J Indian Soc Periodontol* 2013;17:124-127.
3. Malathi K, Muthukumarswamy A, Shabbir MA. Management of multiple gingival recession- a case report. *Int J Dent Clinics* 2014;6:18-20.
4. Mhaske M, Thakur N, Raut S. Coronally advanced flap along with autologous platelet rich fibrin: boon for recession coverage- a case report. *Int J Contemp Medical Res* 2016;3:1190-1193.
5. Raetzke PB. Covering localized areas of root exposure employing the envelope technique. *J Periodontol* 1985;56:397-402.
6. Zabalegui I, Sicilia A, Cambra J, Gil J, Sanz M. Treatment of multiple adjacent gingival recessions with the tunnel subepithelial connective tissue graft: a clinical report. *Int J Periodontics Restorative Dent* 1999;19:199-206.
7. Agarwal K, Chandra C, Agarwal K, Kumar N. Lateral sliding bridge flap technique along with platelet rich fibrin and guided tissue regeneration for root coverage. *J Indian Soc Periodontol* 2013;17:801-805.
8. Gupta Vivek, Bains K, Mohan R, Bains R. Bridge flap technique as a single-step solution to mucogingival problems: A case series. *Contemp Clin Dent* 2011;2:110-114.
9. Marggraf E. A direct technique with a double lateral bridging flap for coverage of denuded root surface and gingiva extension. Clinical evaluation after 2 years. *J Clin Periodontol* 1985;12:69-76.
10. Sandeep JN, Kaur J, Galgali SR. Single step root coverage with modified bridge flap technique: A pilot study. *Int J Case Rep Imag* 2016;7:204-207.
11. Agarwal SK, Jhingran R, Bains VK, Srivastava R, Madan R, Rizvi I. Patient-centered evaluation of microsurgical management of gingival recession using coronally advanced flap with platelet-rich fibrin or amnion membrane: A comparative analysis. *Eur J Dent* 2016;10:121-133.
12. Ross R, Glomset J, Kariya B, Harker L. A platelet-dependent serum factor that stimulates the proliferation of arterial smooth muscle cells in vitro. *Proc Natl Acad Sci USA* 1974;71:1207-1210.
13. Choukroun J, Adda F, Schoeffler C, Vervelle A. Opportunity in perio-implant: The PRF. *Implantology* 2001;42:55-62.
14. Edlan A, Mejchar B. Plastic surgery of the vestibule in periodontal therapy. *Int Dent J* 1963;13:593-597.
15. Rajaram V, Thyegarajan R, Balachandran A, Aari G, Kanakamedala A. Platelet Rich Fibrin in double lateral sliding bridge flap procedure for gingival recession coverage: An original study. *J Indian Soc Periodontol* 2015;19:665-670.