

Combined Therapy in Gingival Recession Coverage: Collagen Matrix with Platelet-Rich Plasma (PRP)



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Introduction

Coverage of gingival recession represents one of the main challenges in mucogingival surgery. Among other causes, insufficient amount and width of keratinized gingiva, protrusion of teeth, and traumatic brushing represent the most frequent causes of gingival recession. Surgery procedures such as autologous free mesenchymal graft with coronally advanced flap are used for coverage of gingival recession. Morbidity, pain and discomfort of the donor site led to development of new techniques and materials. Collagen Matrix (CM; Mucograft®, Geistlich, Switzerland) was developed for gingival recession coverage and for augmentation of keratinized tissue around teeth and implants. CM eliminates the need for donor site surgery, can be easily trimmed using scissors and is packed in sterile box. CM can be used immediately without any activation or preparation. CM is a predictable alternative to free mesenchymal graft. In dry state the handling is almost similar to autologous tissue. CM can be sutured to allow tight adaptation to the root surface and to ensure complete immobility during healing. Platelet-Rich Plasma (PRP) is autologous peripheral blood derivative that contains high concentration of growth factors. We assumed that addition of PRP to CM can lead to better clinical outcomes and diminish postoperative swelling and discomfort of the patient.

Discussion

Absence of keratinized gingiva and gingival recession are one of the key problems of mucogingival surgery. Although there is no ideal amount of keratinized tissue that would prevent development of gingival recession thick and wide zone of keratinized gingiva is preferable.

Traditional well established methods for gingival recession coverage and augmentation of keratinized gingiva are using autologous tissue. However, second site surgery morbidity, pain, longer surgery time favors the use of new techniques and materials. CM has been shown to increase the width of keratinized tissue and is suitable for gingival recession coverage.

Up to date, there is no scientific evidence of using CM together with PRP. Addition of PRP might promote the healing within first days after the surgery, and thus improve the gain of keratinized tissue, minimize the swelling and pain.

Conclusion

Within the limitation of small number of operated patients we can conclude that PRP helps to diminish the postoperative swelling and speeds up the healing process. Future research is needed to prove the benefits of combined CM and PRP therapy.

Case report No. 1

29 year old male patient, no systemic treatment, no medication, no allergies. Occlusal trauma adjusted during two visits, dental hygiene instructions focusing on atraumatic tooth brushing technique was given twice before the surgery. Before the surgery patient rinsed with chlorhexidine 0.2% solution for a minute. After administration of local anesthesia full/split/full thickness flap was raised. The recipient site was prepared by sharp dissection in order to create a periosteal bed free of any muscle attachment. The vestibular bone defect was 8 mm from CEJ. The root was planned with hand instruments and conditioned with EDTA. CM was trimmed and soaked in PRP which was separated before the surgery. CM was sutured with resorbable 5-0 sutures. The mucoperiosteal flap for released to achieve tension free flap adaptation. Patient was instructed not to brush his teeth for two weeks and rinse with chlorhexidine 0.2% for three weeks twice daily.



Fig. 1 Miller class II recession with minimal keratinized gingiva.



Fig. 2 Sharp dissection of full/split/full mucoperiosteal flap.



Fig. 3 Conditioning of the root surface with EDTA.



Fig. 4 CM membrane is soaked in PRP.



Fig. 5 Adaptation of CM to the exposed root. CM was sutured with sling resorbable sutures.



Fig. 6 Tension free adaptation and suturing of the double papilla flap over the CM. Light pressure was applied for 5 minutes.



Fig. 7 Clinical picture after 10 days before sutures removal. Healing was uneventful with no consumption of analgesics.



Fig. 8 After 3 month adequate amount of keratinized gingiva can be seen. 85% root coverage was achieved.

Case report No. 2

43 year old female patient with no systemic disease, medication or allergies. Before the surgery patient was given instructions about atraumatic brushing technique. Patient underwent two dental hygiene sessions. Before the surgery patient rinsed for a minute with chlorhexidine 0.2% solution. After administration of local anesthesia full thickness flap was raised from 21 to 24. Interdental papillae were preserved. The roots were planned with hand instruments. CM membrane was trimmed, soaked with PRP and after adaptation on exposed roots sutured with resorbable 5-0 sutures. Patient was instructed to rinse with chlorhexidine 0.2% for three weeks. The healing was uneventful. Sutures were removed after two weeks.



Fig. 9 Multiple recession in the upper jaw.



Fig. 10 Detail of frenum pull near left upper canine and absence of keratinized gingiva.



Fig. 11 After elevation of mucoperiosteal flap 7mm defect can be seen.



Fig. 12 CM is covered with PRP.

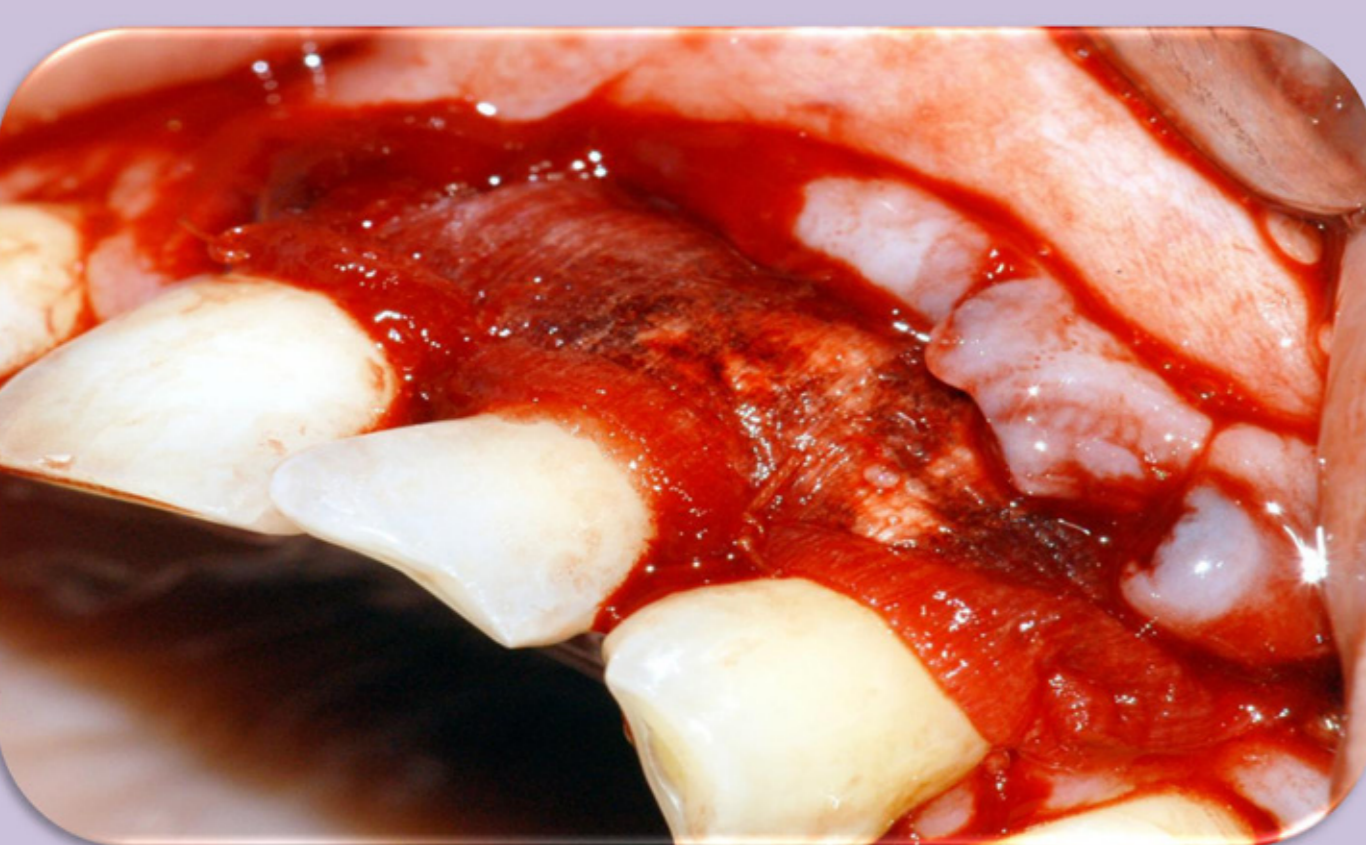


Fig. 13 CM with PRP is adapted and sutured around the teeth with single resorbable 5-0 sutures.



Fig. 14 Uneventful healing two weeks after the surgery. Sutures were removed and teeth were gently polished.



Fig. 15 Four month healing with increased amount of keratinized tissue.



Fig. 16 Full coverage of 22 and partial coverage of 21 and 23 can be observed.