

DEEP INFRABONY DEFECT REGENERATION WITH L-PRF AND XENOGRAFT

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CLINICAL CASE

Description

Patient, female, 27 years-old, with a localized aggressive periodontitis presents a recurrent periodontal pocket after previous regenerative procedure on the mesial surface of tooth 16. A minimally invasive surgical approach (M-MIST) was used to regenerate the present deep infrabony periodontal defect using a xenogeneic/ L-PRF bone block and L-PRF membranes. A short-term follow-up is presented to show the initial healing potential of this technique.



1. Pre-operative buccal view of 16



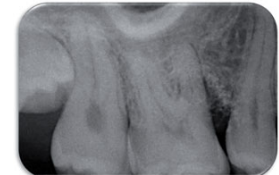
2. Pre-operative occlusal view of 16



3. Pre-operative palatal view of 16



4. Pre-operative probing depth (PD=7 mm)



5. Pre-operative periapical radiography

Surgical Protocol



6. Collection of 6 tubes of 8 and 9 mL of patient blood



7. Centrifugation at 2700 rpm for 3 min for fibrinogen separation



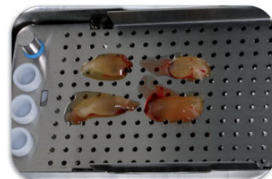
8. Fibrinogen collection



9. L-PRF clots collection, after new centrifugation for 12 min



10. Careful separation of red blood cells



11. L-PRF clots without red blood cells



12. Clots compression for, at least, 5 min



13. Obtained L-PRF membranes after clots compression



14. Surgical access (M-MIST)



15. Removal of capsulated regenerative material



16. Presence of residual calculus on a radicular groove



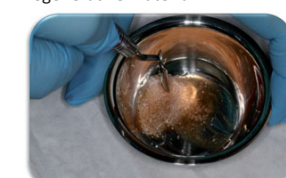
17. Cleaned infrabony defect (8mm deep)



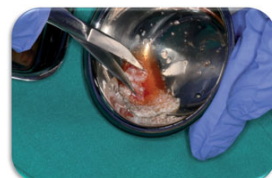
18. Xenograft (Bio-Oss® - Geistlich Pharma AG, Switzerland)



19. Collection of the membrane compression surplus fluid



20. Hydration of the xenograft with the collected fluid



21. Mixture of hydrated xenograft with L-PRF membrane fragments



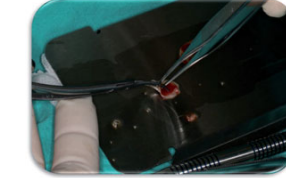
22. Addition of fibrinogen to obtain the bone block



23. Insertion of the bone block into the defect



24. Bone block compaction



25. Conformation of an L-PRF membrane to cover the bone block



26. Placement of L-PRF membrane over the bone block



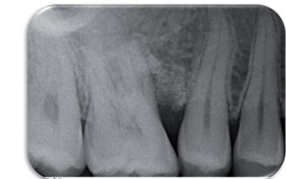
27. Modified internal mattress suture with a 5-0 monofilament thread



28. Post-operative view at 5 days



29. PD at 6 months (5mm)



30. Post-operative periapical radiography at 6 months

DISCUSSION

Author and Year	Meta-analysis	Study type	Intervention	Follow-up (months)	Outcomes (mm)						Statistic significance
					PD reduction		CAL		Bone fill		
Castro <i>et al.</i> , 2017	Yes	SR	L-PRF+OFD vs OFD	6	SMD: 1.10; 95% CI: 0.6-1.6		SMD: 1.20; 95% CI: 0.5-1.9		SMD: 1.70; 95% CI: 1.0-2.3		P < 0.001
					Test group	Control group	Test group	Control group	Test group	Control group	
Shah <i>et al.</i> , 2014	Yes	SR	PRF+OFD vs OFD	9-12	4.55 to 4.69	2.40 to 3.56	3.31 to 4.73	1.40 to 2.77	1.93 to 2.5	0.09 to 1.24	-
Panda <i>et al.</i> , 2014	Yes	SR	PRF+ODF vs OFD	9	3.82 to 3.9	-	3.03 to 3.17	-	2.8 to 3.2	-	-
Agarwal <i>et al.</i> , 2015	No	RCT	PRF+DFDBA vs DFDBA+saline	12	4.15 ± 0.84	3.60 ± 0.51	3.73 ± 0.74	2.61 ± 0.68	3.50 ± 0.67	2.49 ± 0.64	P < 0.05
Lekovic <i>et al.</i> , 2011	No	RCT	PRF+BPBM vs PRF	6	4.47 ± 0.78 (V) and 4.29 ± 0.82 (L)	3.35 ± 0.68 (V) and 3.24 ± 0.73 (L)	3.82 ± 0.78 (V) and 3.71 ± 0.75 (L)	2.24 ± 0.73 (V) and 2.12 ± 0.68 (L)	4.06 ± 0.87 (V) and 3.94 ± 0.73 (L)	2.21 ± 0.68 (V) and 2.06 ± 0.64 (L)	P ≤ 0.05
Thorat <i>et al.</i> , 2011	No	RCT	PRF+OFD vs OFD	9	4.56 ± 0.37	3.56 ± 0.27	2.13 ± 0.43	3.69 ± 0.44	-	-	P < 0.001

Lately, there has been a revival of the use of platelet concentrates in Periodontology. The published systematic reviews (RS) on this subject show that the use of L-PRF associated with surgical debridement (OFD) shows a significant reduction in probing pocket depth (PD), a greater clinical attachment gain (CAL) and a greater radiographic bone filling, compared to isolated OFD.^{1,2} Likewise, several randomized clinical trials (RCT) have shown that the association of L-PRF with other regenerative biomaterials, such as allografts and xenografts, presents very favorable clinical results with this type of combined approach, highlighting the biological contribution of L-PRF in the potentiation of postoperative healing.^{3,4}

The clinical case presented is in agreement with the available scientific evidence, with a 2 mm pocket depth reduction, a clinical attachment gain of 2 mm and a good radiographic bone filling of the defect, without adverse effects.

CONCLUSION

Considering the short-term healing limits of this clinical case, the combined use of L-PRF with a xenograft proved to be effective in the treatment of this periodontal infrabony defect and without significant morbidity for the patient. Although with promising results, the existing scientific evidence emphasizes the need for more studies with quality and scientific validity to prove the dimension of the effectiveness of this technique.

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