

Pelegrine AA, Maia PWC, Teixeira ML, Macedo LGS, Aloise AC
Implantology Department, São Leopoldo Mandic, Campinas, SP

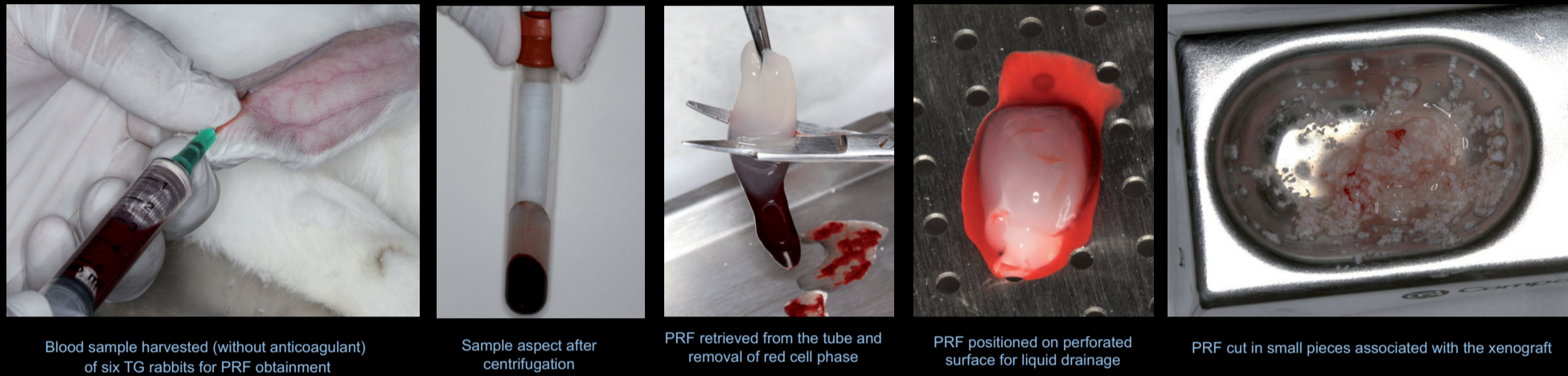
OBJECTIVES

The aim of this study was to histomorphometrically evaluate the effects of the association of platelet rich fibrin (PRF) with a xenograft, in critical bone defects in rabbits' calvaria.

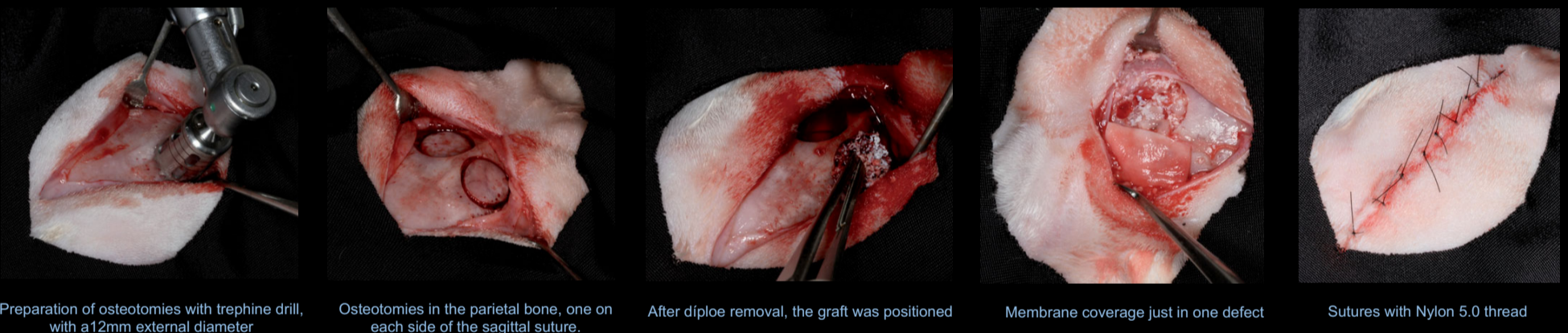
MATERIALS AND METHODS

Twelve New Zealand adult male rabbits were distributed in two groups, according to the graft material that was used: Control (CG) – Bio-Oss xenograft (n=6); and Test (TG) – Bio-Oss xenograft associated to PRF (n=6). In all animals two bilateral bone defects with twelve millimeters in diameter were created, but just one defect received the Bio-Gide collagen membrane coverage. After eight weeks the animals were sacrificed and a histomorphometric analysis was done.

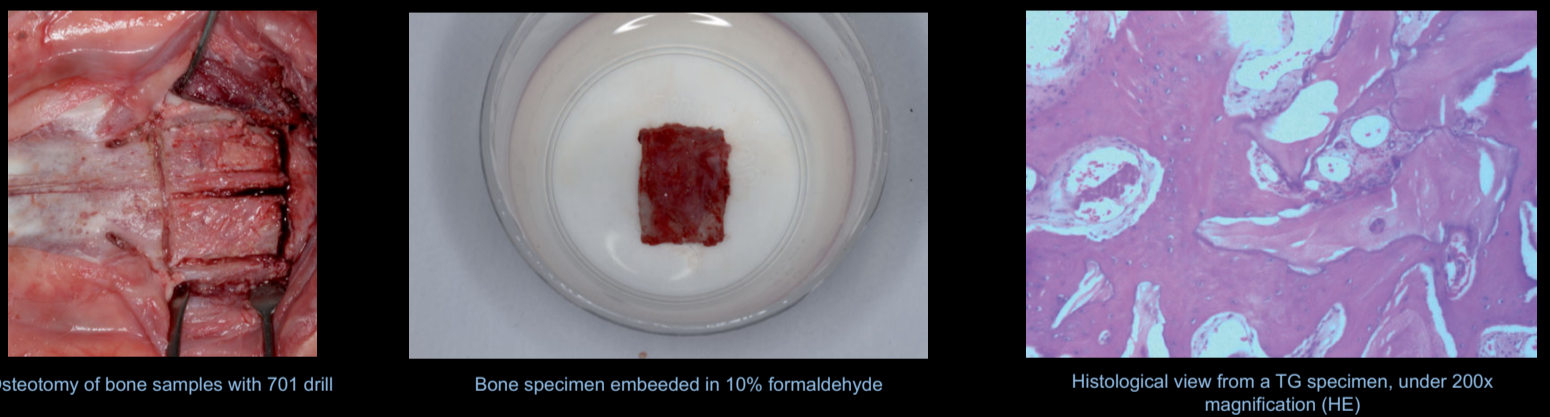
PRF OBTENTION: Following Choukroun's original protocol (Dohan et al., 2006), blood samples were centrifuged for ten minutes in a 3,000 rpm spin, by the Intra-Spin L-PRF centrifuge (Intra-lock, USA). The PRF was cut in small pieces before being associated with the xenograft for TG.



SURGICAL PROCEDURE: A full thickness flap was performed, two bone defects were created (with a trephine bur) and the grafts placed inside the defect. After the membrane coverage (just in one side), the flaps were sutured with nylon thread.



After 8 weeks



HISTOMORPHOMETRIC ANALYSIS: After histological processing, images were captured using an optical microscope coupled to a digital camera, and reproduced on a computer screen using the Infinity Analyze software (Lumenera, Canada). Histomorphometric analysis was performed by evaluating the following tissues: Non Vital Mineralized Tissue (NVMT), Vital Mineralized Tissue (VMT) and Non Mineralized Tissue (NMT).

RESULTS

Table – Statistical comparison of mean values (in percentage, %) between Test Group (n=6) and Control Group (n=6)

	WITH MEMBRANE			WITHOUT MEMBRANE		
	Test Group	Control Group	P-value	Test Group	Control Group	P-value
NVMT	17.88 ± 7.57	13.50 ± 0.09	0.2971	16.59 ± 3.54	13.09 ± 0.06	0.0542
VMT	13.88 ± 5.68	13.29 ± 0.16	0.5211	9.52 ± 0.60	6.56 ± 0.08	0.0039
NMT	68.24 ± 5.05	73.21 ± 0.12	0.0776	73.74 ± 3.48	80.34 ± 0.05	0.0038

NVMT: Non Vital Mineralized Tissue; VMT: Vital Mineralized Tissue; NMT: Non Mineralized Tissue. Statistically significant, $P \leq 0.05$ (Kuskal-Wallis test)

CONCLUSIONS

In this experimental model: 1) Platelet rich fibrin does not result in higher levels of bone formation when a guided bone regeneration technique (i.e. with membrane coverage) is used. 2) The usage of the collagen membrane has a synergistic effect on bone healing when associated with a xenograft. 3) Platelet rich fibrin may increase the level of newly formed bone only in bone grafting procedures using xenograft without collagen membrane coverage.