

# Treatment of Intrabony Defects With Bovine-Derived Xenograft Alone and in Combination With Platelet-Rich Plasma: A Randomized Clinical Trial

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**Background:** In the treatment of periodontal intrabony defects, the benefits of adding platelet-rich plasma (PRP) to a bone replacement grafting material have not been tested. The purpose of this study was to compare the clinical outcomes obtained by the combination of PRP and a bovine derived xenograft (BDX) to those obtained from the use of the bone replacement graft alone.

**Methods:** Thirteen patients were enrolled in a randomized, split mouth, double-masked clinical trial. Bilateral defects were matched according to their intrasurgical measurements. Qualifying defects had loss of attachment of  $\geq 6$  mm, a radiographically detectable defect of  $\geq 4$  mm, at least two remaining osseous walls, and not primarily related to a furcation involvement. After the hygienic phase, at the baseline examination, probing depth (PD), clinical attachment level (CAL), and recession (REC) were measured. During open flap debridement, the defects were randomly assigned to receive either BDX mixed with PRP or BDX alone. Baseline osseous intrasurgical measurements were obtained. Post-surgical follow-up and maintenance were performed and PD, CAL, and REC were remeasured at 6 months. The mean baseline and 6-month PD, CAL, and REC of the deepest buccal and lingual measurements related to the defect for each group were computed. The change from baseline to 6 months for each parameter measured was calculated. Pre- and postoperative comparisons were made between treatment groups at 6 months.

**Results:** Randomization of the defects resulted in comparable groups ( $P \geq 0.05$ ). At 6 months, paired *t* test comparisons within groups showed statistically significant benefits with both treatment modalities ( $P \leq 0.05$ ). The mean changes ( $\Delta$ ) at 6 months for the test and the control groups at the deepest sites were: PD reduction: 3.54 and 2.53 mm; CAL gain: 3.15 and 2.31 mm; and REC:  $-0.38$  and  $-0.23$  mm, respectively. Paired *t* test comparisons yielded significant differences between treatments for PD and CAL ( $P \leq 0.05$ ).

**Conclusion:** In this 6-month clinical trial, the addition of a high concentration of autologous platelets to a bovine derived xenograft to treat intrabony defects significantly improved their clinical periodontal response. *J Periodontol* 2004;75:1668-1677.

## KEY WORDS

Blood platelets; clinical trials; comparison studies; follow-up studies; grafts, bone; periodontal diseases/therapy; plasma.