

Our Research is Your Success...

December  
2013

Published in:

# CURRENT THERAPEUTIC RESEARCH

”

The Use of Platelet-Rich Fibrin in Combination with Biphasic Calcium Phosphate in the Treatment of Bone Defects: A Histologic and Histomorphometric Study” \*

Nilüfer Bölükbaşı, PhD, Sinem Yenişol, PhD, Merva Soluk Tekkesin, PhD,  
Kemal Altunalmaz, PhD

\* Nilüfer Bölükbaşı, PhD, Sinem Yenişol, PhD, Merva Soluk Tekkesin, PhD, Kemal Altunalmaz, PhD. The Use of Platelet-Rich Fibrin in Combination with Biphasic Calcium Phosphate in the Treatment of Bone Defects: A Histologic and Histomorphometric Study. Current Therapeutic Research; 75(2013)15-21

CURRENT THERAPEUTIC RESEARCH



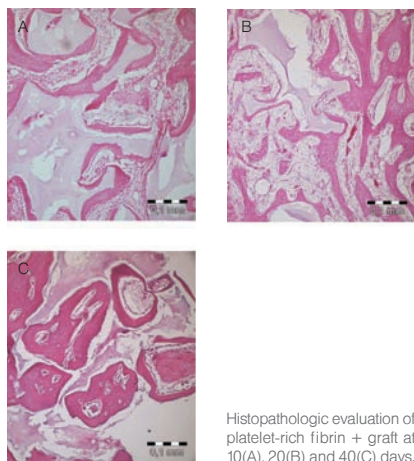
Paper online publication of research & reviews  
Current Therapeutic Research is an open access journal

www.CurrentTherapeuticRes.com

<sup>1</sup>Nilüfer Bölükbaşı, PhD  
<sup>1</sup>Sinem Yeniyoğlu, PhD  
<sup>2</sup>Merva Soluk Tekkesin, PhD  
<sup>3</sup>Kemal Altunalmaz, PhD

## “The Use of Platelet-Rich Fibrin in Combination with Biphasic Calcium Phosphate in the Treatment of Bone Defects: A Histologic and Histomorphometric Study”

### SUMMARY.



New bone formation ratios in each group at 10, 20 and 40 days. Data are mean (SD).

Killing day	Empty defect	PRF	BCP	PRF+BCP
10 days	3.4(0.7)	7.4(0.7)	7.2(1.6)	11.4(0.7)
20 days	24.9(0.8)	29.5(1.6)	29.6(1.7)	42.2(0.9)
40 days	39.7(3.1)	38.9(4.9)	49.1(3.1)	54.9(0.8)

BCP, biphasic calcium phosphate; PRF, platelet-rich fibrin.

#### Background

Platelet-rich fibrin (PRF) is a leukocyte and platelet concentrate containing many growth factors. Its potential for hard tissue augmentation as a sole grafting material or in combination with other grafting materials has been investigated in many studies.

#### Objective

The aim of this histologic study was to evaluate the efficacy of PRF mixed with biphasic calcium phosphate (BCP) on bone regeneration in surgically created bone defects.

#### Methods

Defects 5 mm in diameter were created in both tibias of 6 sheep. The defects were left empty or grafted with BCP, PRF, or BCP (HA-to-TCP ratio 60:40; (4BONE™ BCH, MIS Implants Technologies, Israel) + PRF (1:1 ratio). Animals were sacrificed at 10, 20, and 40 days. The specimens underwent histologic and histomorphometric analysis.

#### Results

None of the groups displayed any signs of necrosis. Inflammation was observed in all groups at 10 days; 2 specimens of PRF+BCP and all empty defects showed inflammatory cell infiltration at 20 days. During the 40-day evaluation period, the PRF+BCP group showed the highest ratios of new bone. The other 3 groups showed statistically similar results. In the BCP and PRF+BCP groups, the residual graft ratios were decreased at consecutive time intervals. The difference between the 2 groups was not statistically significant during follow-up.

#### Conclusions

The current study revealed a histomorphometric increase in bone formation with the addition of PRF to BCP in surgically created defects in sheep tibia.

#### Authors' affiliations

<sup>1</sup>Department of Oral Implantology, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

<sup>2</sup>Institute of Oncology, Department of Tumor Pathology, Istanbul University, Istanbul, Turkey

<sup>3</sup>Department of Surgery, Faculty of Veterinary Medicine, Istanbul University, Istanbul, Turkey