

The Effect of Injectable Platelet-rich Fibrin on Alveolar Bone Defects

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Abstract

Introduction: The aim of this study was to assess the theory of whether injectable platelet-rich fibrin (i-PRF) mixed particulate graft material provides adequate treatment outcomes without barrier membranes, in patients who have insufficient alveolar bone width on dental implant treatment.

Materials and Methods: This case-control study was conducted in patients who have alveolar bone width (ABW) of less than 4 mm in the anterior maxilla. Patients who treated with simultaneously dental implant surgery were divided into 3 groups: collagen membrane + i-PRF mixed particulate allogeneic graft (PAG) in group I (mean age 38.64 ± 4.45 years), leukocyte and platelet-rich fibrin (L-PRF) + i-PRF mixed PAG in group II (mean age 36.57 ± 5.19 years), and i-PRF mixed PAG in group III (mean age 36.21 ± 6.85 years). Cone-beam computed tomography were obtained before the surgery and at 6 months postoperatively. The repeated measure ANOVA was carried out to assess the change of ABW between the groups by using the SPSS program with a significance level of $\alpha = 0.05$.

Results: The initial ABW in the study groups was observed 3.09 ± 0.45 , 3.15 ± 0.39 and 3.06 ± 0.66 , respectively (ANOVA result: $p=0.891$) and there were no statistically significant differences between the groups. The change of ABW in group III (7.04 ± 0.62) was found to be higher compared to group I (6.62 ± 0.52) and group II (6.68 ± 0.50) (Dunnett T3 results: $p=0.026$ and $p=0.009$, respectively).

Discussion & Conclusion: Based on the results of this study, i-PRF can be considered as an alternative method in particulate bone grafts to provide treatment of localized alveolar bone defects.

Keywords: Injectable platelet-rich fibrin, localized alveolar bone defects, alveolar bone augmentation.