

Densitometric analysis of prf vs xenograft for sinus augmentation procedures 5 years follow-up

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Background: The autologous platelet concentrates Platelet-Rich Plasma (PRP) and Platelet-Rich Fibrin (PRF) are used in various medical fields, particularly in oral and maxillofacial surgery. Platelet-rich fibrin (PRF) is derived from an autogenous preparation of concentrated platelets that contains high levels of polypeptide growth factors and therefore has the potential to be used as regenerative treatment for bone defects. Growth factors are the key elements in wound healing, particularly in bone regeneration.

Aim/Hypothesis: The purpose of this study was to examine the suitability of autologous PRF transplant in combination with xenograft as regenerative treatment for maxillary sinus augmentation in humans and compare it to xenograft alone using densitometric measurements.

Material and Methods: The sample of presented study consists of 10 patients partially edentulous in the lateral region of the upper jaw. Lateral approach for maxillary sinus augmentation with immediate placement of two dental implants were used for all patients. In the first group of 5 patients sinus augmentation was performed using xenographic bone graft (Bio-Oss®, Geistlich, Germany) only and finally covered with resorbable collagen membrane (Bio-Gide®, Geistlich, Germany). In the second group of 5 patients sinus augmentation was performed using combination of autologous PRF and xenograft (Bio-Oss®, Geistlich, Germany) and covered using combination of resorbable collagen membrane (Bio-Gide®, Geistlich, Germany) and PRF membrane. Following the healing period of 6 months, the osseointegration of inserted implants was assessed with resonance frequency analysis and considered adequate. All inserted implants were loaded with metal-ceramic restorations. All patients were followed for 5 years after loading through clinical follow-ups and digital radiographic imaging after 6, 12, 18, 24, 48 and 60 months. Densitometric analysis was performed based on radiographic images using customized software.

Results: After comparing the average densities of all inserted implants, the results showed statistically significant increase of density in group of patients where combination of xenograft and autologous PRF transplant for sinus augmentation was used.

Conclusions and Clinical Implications: The results of this study indicate that PRF can improve densitometric parameters associated with maxillary sinus floor elevation procedures and immediate implant placement, improving clinical implant stability and promoting bone healing following augmentation. PRF can be used as an effective modality for promoting bone healing and osseointegration process.