Socket preservation using autogenous particulated dentin graft – a clinical study

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Background: Alveolar bone loss and structural changes of soft tissue can occur following tooth extraction. Because of these significant changes, placement of a conventional bridge or implant – supported crown becomes more difficult. To prevent this situation, socket preservation using bone graft materials such as autogenous bone graft, allograft, xenograft or alloplastic graft can be performed immediately after tooth extraction. However, all bone substitute materials have lots of disadvantages limiting their clinical use. Due to the similarity to the bone, dentin is considered to be used as graft material to eliminate these disadvantages.

Aim/Hypothesis: In this study, we aimed to evaluate the effects of autogenous dentin graft applied to the tooth extraction sockets on bone healing process.

Material and Methods: Eleven systemically healthy patients who were planned to be treated with dental implant after tooth extraction were included in this study. A total of 63 extraction sockets were divided randomly and equally into 3 groups. In group I, the sockets were left empty for spontaneous healing process as control group. In group II, the sockets were filled with autogenous particulated dentin graft and in group III, the sockets were filled with the mixture of platelet-rich fibrin (PRF) and autogenous particulated dentin graft for socket preservation. Histopathological and 3-dimensional radiological assessments were performed to compare new bone formation between groups.

Results: According to histopathological observations there are significant increases in groups both II and III in terms of new bone area and capillary volume compared to group I. Furthermore the most intense and regenerative areas are seen in group III.

Conclusions and Clinical Implications: The results of this study showed that grafting of extraction sockets using autogenous particulated dentin graft, especially mixture of PRF and autogenous particulated dentin graft provides effective socket preservation, additionally sufficient and qualified new bone formation in the grafted sites which is essential for successful dental implant placement.