Evaluation of platelet Rich Fibrin Effect on the Bone Density after Teeth Extraction by Cone Beam Computed Tomography

A Thesis
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Abstract

Background: Following tooth removal bone formation normally takes 16 weeks and may result in less than adequate volume for the necessary reconstruction.

Platelet Rich Fibrin (PRF) is simple, inexpensive and minimally invasive method to obtain a natural concentration of autologous growth factors which is widely used in different field of medicine to enhance soft and hard tissue healing .

Aims of the study: evaluation **of** the role of platelet rich fibrin on bone density of sockets after teeth extraction and comparison the density of cancellous bone formed in the socket after 4 months between upper and lower jaw by CBCT.

Materials and methods: The clinical work took place at Department of Oral and Maxillofacial Surgery, College of Dentistry, University of Baghdad and Oral and Maxillofacial Radiology, in Karbala University. The enrolled 40 participants were 16-males and 24-females with an age range of 20-52 years old. The participants were divided in two groups, the study group in which the PRF was placed inside a fresh extraction socket while the control group conducted without PRF. The patients' age, sex, number of teeth, oral hygiene state were recorded. Both groups had simple non-traumatic teeth extraction. The preparation of the PRF include $5\,ml$ of blood centrifuged at $3000\,rpm$ for $10\,min.$ Then the sockets were gently sutured after putting the PRF clot for stabilization. The suture was removed at 10-14 days. At 4 months post operatively, the new-bone density formed in the socket was measured by CBCT. Statistical analysis was accomplished using Chi square test, contingency coefficient, paired t-test, Mann Whitney U test and independent t-test.

RESSULTS: the study showed that age, gender, tooth number, oral hygiene condition, extraction method of both control groups and study groups were nearly equally distributed with non - significant difference. indicating that the

study sample were comparable. At 4 month follow up measurement: The results showed that there are high bone density formed in total sockets of study group as compared to the control. The Maximum density was **significantly higher** in the study group (1,076.1 ± 446.6) compared to control (779.2 ± 238.6), also Mean density was significantly higher in study group (295.9 ± 218.6) compared to control (185.6± 181.7). But in single rooted area the results showed no significant difference between the both groups. The cancellous bone formed in the socket after teeth extraction showed there are no significant difference between upper and lower jaw in control groups. While in study groups The Minimum density was significantly higher in upper jaw compared to lower jaw, but maximum and mean density did not show significant difference.

Conclusions: Local application of platelet rich fibrin can increase the bone density in the socket. PRF is autologous graft material is safe and easy to used as sole graft for ridge preservation after teeth extraction.

Within the limitation of this study. Although the mean of minimum density formed in all socket of study groups was higher at 4 months. This increase was no statically significant .The PRF show promising effect on accelerating the bone density of post –extraction sockets after 4 months, the cancellous bone formed in the sockets show no significant difference between upper and lower jaws after 4 months.