

**Evaluation of the Effect of Platelet-Rich
Plasma on Intrabony Defect Repair in
Glucocorticoids -Induced Osteoporosis in
Rabbits**

(Histological and biochemical study)

A Thesis

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Abstract

Background:-

Osteoporosis has an impact on bone healing process, platelets rich plasma (PRP) ameliorated the deleterious effect of osteoporosis on bone healing process. Autologous platelet rich plasma could be used in many clinical fields of oral and maxillofacial bone, implant reconstructive surgery and periodontology. This study was carried out to evaluate histologically the regeneration capacity of autologous (PRP) on defect in the mandible bone of osteoporotic rabbits.

Materials and Methods:-

Forty-eight female rabbits were used in this study, divided into four groups (12 rabbits for each group), each rabbit was subjected to intrabony defect in the mandible. Two groups were save as control groups one of them left for normal healing (group A), while other group were receiving PRP treatment (group B). The remaining two groups were given 10 mg/B.W hydrocortisone i.m daily for 8 weeks to induce OP-like condition which save as experimental groups. One of them left for normal healing (group C), while other were receiving PRP treatment (group D).

After 2, 4, and 6 weeks postoperatively (4 rabbits from each groups), blood sample was taken from each animal for serum alkaline phosphatase, calcium, and phosphorous analysis. Then the animals were sacrificed and the decalcified sections of the bone were studied histologically and histomorphologically. These histometric analyses including counting of bone cells: osteoblast, osteocyte, and osteoclast. Bone trabecular, separation, width, and number; cortical width, blood vessels number, and bone marrow space star volume assed.

Results:-

Histological examinations showed that with the use of autologous platelets rich plasma in an osteoporotic and normal rabbit, an obvious enhancement of

new bone formation and neovascularization significantly more than that of groups without (PRP) application. The results of osteoporotic group treated with (PRP) nearly reached the levels of normal group without PRP in all the three periods postoperatively.

Biochemical serum analysis revealed an increase in serum alkaline phosphatase and calcium concentrations in osteoporotic animals than control one, while serum phosphorous level increased in control animals than osteoporotic ones.

Conclusions:-

This study illustrated that the (PRP) has an osteopromotive activity that accelerated bone-healing process in mandibular bone defect of an osteoporotic rabbits as well as in normal rabbits.