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**Efficacy of Local Application of Simvastatin and Gel
foam Combination on Bone Density, in the Sockets of
Surgically Removed Mandibular third Molars
(A Prospective Comparative Clinical Study)**

A thesis

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Abstract

Background: After tooth extraction, bone reconstruction and regeneration take about 14-16 weeks to perform normally. This process may result in inadequate volume, quality, less than the required for ridge augmentation. Simvastatin, the anti-hypercholesterolemia medication, studied to be one of the bone autogenous enhancing materials, and plays a significant role in bone density promotion, and soft tissue healing acceleration. Simvastatin is biocompatible, well tolerated, with fewer side effects, locally applied medication with the minimally invasive method, and has no systemic side effects.

Aims of this study: This prospective comparative clinical study trained to assess the efficacy of simvastatin in bone regeneration in the socket of the surgically extracted mandibular third molar and to Compare the bone density of the regenerated bone in the sockets treated with gelfoam (control group), and sockets treated with 10 mg simvastatin + gelfoam combination (study group).

Methods and materials: This study conducted from January 2019 to September 2019. The clinical part of this study took place at the Department of Oral and Maxillofacial Surgery and the department of radiology for radiographic works in the College of Dentistry Teaching Hospital /the University Of Baghdad and AL-Sadr Specialized Health Center of dentistry.

The subscribed cases were 32 (15 male and 17 female) distributed randomly in two groups; study (15) and control (17). After surgical removal of the mandibular 3rd molars, the study group treated with the local application of simvastatin + gel foam in their sockets, and the control group patients treated with the application of gel foam only in their sockets.

After three months, the mean bone density of the reformed bone in the sockets of the study group measured and compared with the bone density of the control group using cone-beam computed tomography (CBCT).

Results: This study showed that age, gender, surgical procedure difficulty of both groups (study and control) was nearly equally distributed with no significant differences. At three months postoperatively, CBCT bone density measurement was significantly higher in the study group (486.78 Hu.) compared with the control group (327.00 Hu.).

Conclusions: The local application of 10mg simvastatin powder + gel foam, combination, can increase the bone density in the sockets of surgically extracted mandibular third molars, and it is safe to be use for ridge preservation after teeth extraction.