

EVALUATION OF THE REGENERATIVE POTENTIAL OF SIMVASTATIN AROUND IMMEDIATE DENTAL IMPLANTS IN FRESHLY EXTRACTED SOCKETS: AN EXPERIMENTAL STUDY

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ABSTRACT

Immediate implants are widely used nowadays in an attempt to reduce post-extraction alveolar bone resorption associated with delayed implantation. Nevertheless, due to discrepancy between the transversal diameters of the socket and of the implant, a gap may generate between the bony walls of the socket and the neck of the implant. Simvastatin, a cholesterol lowering drug, is used systemically in treatment of osteoporosis due to its demonstrated bone forming potential. In the current work, the studied drug was formulated as granules in cellulosic polymeric matrix (Hydroxy propyl methyl cellulose HPMC) in Faculty of Pharmacy, Alexandria University to be used locally around immediate implants. Eight dogs in the present study were used to evaluate clinically and histologically the effect of local application of Simvastatin granules around immediate implants. A split mouth design was used. In all dogs, under general anesthesia, flaps were reflected and extraction of left and right mandibular third premolars was surgically and atraumatically performed. The right side of the mandible was considered as the study group, where acid-etched, sand-blasted, large grit Microdent implants (3.5 mm in diameter; 10 mm long) were immediately seated around which Simvastatin granules (2.2mg) were packed; whereas the left side of the mandible constituted the control group where only implants were placed. Four dogs were sacrificed at 3 weeks, and the remaining four were euthanized at 3 months. The animals were clinically evaluated the day of sacrifice for gingival color and bleeding. After decalcification, the implants were removed and specimens were processed and stained with H & E and Gomori's Trichrome stains. Histologic evaluation was performed for determination of type of healing, and tissue reaction in both groups. All cases showed uneventful clinical healing without signs of infection, but the study group manifested better and faster healing as regards the gingival colour and bleeding. Histological results were favourable in both groups, with better findings in Simvastatin filled defects where bone regeneration was evident from host bone to implant site; neo-vascularization and absence of inflammatory cells were also apparent in this group. It could be concluded that Simvastatin granules around immediate implants result in osteogenesis filling the space around the implant more preferably than control group. Moreover, Simvastatin could be an alternative to guided bone regeneration.

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