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Long Time Preservation of Alveolar Bone by HAp Granules after Teeth Extraction

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Introduction. It has been well documented that teeth extraction may induce significant dimensional changes of alveolar ridge. The problem that clinicians face is how to manage tooth extractions to provide for the future placement of a dental implant or to maximize ridge dimensions for the fabrication of a fixed or removable prosthesis. In early period of use of synthetic calcium phosphate bioceramics for filling of extraction sites the beta-TCP has been more placed. The width of the extraction sockets was preserved to 91 % of the preoperative width.

Aim, Materials and Methods. During the year 2005, the filling of sockets after extraction was performed on 42 patients; 26 men, 16 women. Extracted teeth were: 22 molars, 13 premolars; 11 incisors; 9 canines; all without local signs of suppurative inflammation. With permision of Riga Stradins university Ethical commity as grafting material was pure synthetic sharp-edged irregular granules of hydroxyapatite (HAp) 0.3–0.5–1.0 mm in size produced in Laboratory of Biomaterials at Riga Technical University, tested chemicaly and approved on experimental animals. Comercial material in 5 cases was Cerasorb, pure tricalcium phosphate (TCPβ) material. All sites were left uncovered with some approximation sutures to heal by secondary intention. The patients did not wear any prosthesis during the healing period. Antibiotic therapy consisted of 1 g amoxicillin every 12 hours for 4 days and mouth rinsing with 0.05 % chlorhexidine twice a day for 10 days.

Results. There were no incidences of postoperative infection or graft rejection. Some granules were lost. After 12 years, clinical and x-ray evaluation was performen in 14 cases. No signs of inflammation were observed in all patients. The dental x-rays showed the same height of alveolar bone in cases of pure HAp application. Granulas of HAp in all cases were without signs of resorbtion. Much of the TCPβ graft material had resorbed and height of alveolar bonet decreased 0.5–1.5 mm.

Conclusions. Grafting of sockets using pure HAp synthetic sharp-edged granules without primary wound closure can be an effective minimally invasive method of preserving the alveolar ridge.