

Porous titanium granules for bone regeneration in peri-implantitis-related defects

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Background: Because of the increasing number of implant insertions, peri-implantitis and related therapies have become important issues of clinical work. Lacking prophylactics, plaque control, oral hygienic instructions, and evaluation of biomechanical factors contribute to serious peri-implantitis-related defects. For regeneration, non-resorbable bone graft materials may offer advantages as compared with resorbable bone graft materials or autogenous bone grafts.

Aim: The purpose of this study is the evaluation of porous titanium granules as bone graft material for treating peri-implantitis-related defects.

Methods: Twenty implants with two- and three-wall intraosseous defects were included in this study. Four suprastructures were removed and the respective implants submerged for the healing period. Sixteen implants could be maintained with suprastructures during peri-implantitis treatment. After crestal incision and debriment with plastic-scalers, intraosseous defects were cleaned with chlorhexidin. Defect walls were perforated with a bur to promote bleeding, titanium granules (Natix, Tigran Technologies AB, Malmö, Sweden) were inserted into the defects and the operation site was sutured.

Patients were followed-up for 6 month after operation. Clinical parameters such as probing depths, gingival index, and bleeding on probing were recorded. Radiographs were taken to verify the graft position directly after the operation and after 6 months to verify the osseointegration process of the graft material.

Results: Postoperatively, six implants showed signs of infection and were treated with antibiotics and chlorhexidin irrigation. In these cases, graft material was partially lost during healing. Fourteen implants were without clinical or radiological signs of inflammation.

Conclusions and clinical implications: In this study, porous titanium granules offered a feasible method to regenerate bone in two- and three-walled defects caused by peri-implantitis. Because of the limited number of cases, further investigations with longer observation periods will have to follow. Additionally, the osseointegration of surrounding bone and titanium granules has to be confirmed histologically.