Long-term clinical outcome and morbidity factors after intraoral onlay grafting from the anterior-superior iliac crest

Laura Wanner1, Pit Jacob Voss1, Susanne Nahles2, Katja Nelson1, Tobias Fretwurst1,3

1Department of Oral- and Craniomaxillofacial Surgery, Center for Dental Medicine, University Medical Center, Hugstetter Str. 55, D-79106 Freiburg
2Department of Oral and Maxillofacial Surgery, Navigation and Robotics, Charité Campus Virchow, Berlin, Germany
3Department of Periodontics and Oral Medicine, University of Michigan School of Dentistry, Ann Arbor, USA

Background: Reconstruction and prosthetic rehabilitation of patients presenting severely atrophied alveolar ridges or critical size bone defects of the facial skeleton remain a clinical challenge. Long-term studies concerning dental implants placed in iliac onlay grafts exist, but an evaluation of the peri-implant bone level is rare. In addition, prospective studies regarding bone graft removal from the anterior iliac rim are lacking.

Purpose: Clinical long-term outcome was analyzed after dental implant placement in onlay grafts from the iliac crest. Additionally morbidity was evaluated and influencing factors were identified.

Material and methods: A total of 52 patients, partially edentulous or edentulous, with a mean age of 53.12 years (range 20-78 years) and a remaining bone volume of less than 5 mm of the alveolar ridge underwent iliac onlay bone grafting (IOBG). In a two-stage procedure a total of 196 implants (25 Steri-Oss, 130 Camlog and 41 Straumann) were placed in the maxilla and mandible. Postoperative evaluation included clinical implant success, radiographic examinations to quantify crestal bone level changes as well as identifying factors for harvest-related morbidity.

Results: The grafting procedure was successfully performed in all patients. Patients undergoing oral grafting show low minor postoperative complications (morbidity rate 20 %) with a high overall satisfaction rate of 95 %. A high body mass index (mean 23.34, range 18-29) was correlating with a significantly higher walking aid necessity (p=0.018). The mean amount of crestal bone loss after 10 years was 1.8 mm. There was a significant difference between gender and crestal bone loss but no influence regarding the implant system, diameter of implant and age of the patients (p<0.01).

Conclusion: Severe atrophy can be treated successfully with IOBG in combination with dental implant systems. After ten years a high success rate of 95 % and a low peri-implant bone level loss was shown. Influencing factors, e.g. gender and a high BMI, seemed to be of importance regarding bone resorption and morbidity rate.