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IMPLANT THERAPY
OUTCOMES, SURGICAL
ASPECTS

Reconstruction of severely atrophic
edentulous ridges with autogenous onlay
bone grafts

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Abstract

From 1999 to 2015, 263 patients presenting with severe bone defects of the jaws were reconstructed with autogenous bone blocks. Four to six months later, 1137 implants were placed and loaded after 4 to 6 months. The follow-up ranged from 1 to 20 years (mean: 9 years).

Background and Aim

Background: Severe bone deficiencies derived from atrophy, periodontal disease, and trauma sequelae may hamper the rehabilitation of edentulous ridges with oral implants. Placement of implants can be hindered both by the absence of sufficient bone volume and the proximity of anatomical structures, such as the inferior alveolar nerve, the maxillary sinus, and the nasal floor. Therefore, reconstructive procedures are requested to allow implant placement and adequate implant-supported prosthetic restorations.

Aim: To evaluate the long-term outcome of implant rehabilitations of patients affected by severely resorbed edentulous ridges reconstructed with autogenous bone blocks. Evaluated outcomes were: a) peri-implant bone resorption; b) success and survival rate of implants; and c) patient’s satisfaction.

Methods and Materials

In a 15-year period (1997-2015), 263 patients were reconstructed with autogenous bone grafts harvested from the calvarium (n=75), the ilium (n=123) and the mandibular ramus (n=65).

Six to nine months afterwards, 1137 implants were placed in the reconstructed areas. After a further waiting period, patients were rehabilitated with implant-supported prostheses. Follow-up ranged from 1 to 20 years (mean: 9 years) after the start of prosthetic loading.

Peri-implant bone resorption before and after the start of prosthetic loading was evaluated with a dedicated software (ImageJ®), success and survival rate following Albrektsson's criteria, patient’s satisfaction with a questionnaire.

123

75

65

654

322

161

		1	2	3	4	5
1	postoperative pain at the grafted site during the first 2 weeks after surgery;					
2	postoperative pain at the donor site during the first 2 weeks after surgery;					
3	discomfort due to the inability to use provisional prostheses for 6 weeks after surgery;					
4	discomfort during the healing period, following the second postoperative week;					
5	discomfort related to the dietary limitations prescribed during the healing phases;					
6	frequency of meal interruption because of discomfort following the second postoperative week;					
7	discomfort/limitations perceived at work, following the second postoperative week;					
8	pain/discomfort perceived after the delivery of the final prosthesis;					
9	time after which all forms of pain and discomfort had disappeared;					
10	whether the patient, knowing exactly what to be expected post-operatively, would undergo the same reconstructive procedure again?					

Results

Success and survival rates of implants were: 86.1% and 99.2% with calvarium, respectively; 77.4% and 97.8% with iliac crest; 89.1% and 97.8% with mandibular ramus. The majority of patients (245) were fully satisfied, while only 18 would retrospectively had chosen less invasive solutions.

Conclusions

On the basis of these results, bone reconstruction with autogenous grafts appears to be a reliable solution to allow the placement of implants in severely resorbed ridges. Success and survival rates of implants were consistent with those obtained in case of implants placed in native bone, in particular when patients were reconstructed with calvarium and mandibular ramus, in which the cortical component was dominant. The vast majority of patients were fully satisfied as regards the final results.

References

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