ALVEOLAR RIDGE SPLITTING WITH SIMULTANEOUS IMPLANT PLACEMENT
A retrospective study

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Abstract

Ridge splitting with bone expansion in case of severe atrophy creates favorable conditions for implant placement simultaneously increasing the width from 3.1 mm to 5.9 mm in the current study. A total number of 91 narrow implants were used in 30 patients during 2011-2016. Simultaneous dental implant placement after ridge expansion has the advantage such as reducing costs, time, additional morbidity and less amount of biomaterial.

Background and Aim

Ridge splitting with bone expansion in case of severe atrophy creates favorable conditions for simultaneously dental implant placement. Scipioni et al., suggested that a minimum thickness of 1.5 mm of bone should remain on both buccal and lingual aspects of the implant. Several surgical techniques for ridge augmentation procedures were proposed, but these procedures often require long period of time, are expensive and in case of autogenous bone block grafts causes additional trauma.

Methods and Materials

After clinical and radiographic examinations of edentulous mandible all patients underwent ridge split technique and immediate implant placement (30 cases) using piezorsurgery (27-cases) with micro saw (3-case) in combination with bone augmentation procedure (21-cases). Intercontoural spaces were with autologous material (A-PRF, bone chips- 7 cases) and with a synthetic collagen material (14-cases). All treatment sessions were done under local anesthesia. All implants were placed by the same surgeon using free hand conventional method after ridge expansion. A total number of 91 narrow implants were used with diameter 3.2mm, 3.5mm, 3.6mm and a length of 8.0 mm, 10.0 mm and 11.5mm (Dentium-29 and AB-62). All patient were clinically and radiologically examined at different stages. Radiographic examinations using OPG and CBCT were performed to evaluate bone regeneration and peri-implant bone resorption on mesial and distal aspects.

Results

The assessment was made at the patients’ next visit 4-20 months, with average of 7.71 ±0.76 months. Out of 30 patients 21 have addressed in the second stage: 10 with peri-implant bone resorption and 11 without. Total crestal bone resorption was 1.56 ±0.80mm in 19 implants, 1.65 ±0.88mm mesial and 1.54 ±0.76 mm distal. Bone resorption during osseointegration is present in both types of implants with average 27.5%. The degree of resorption was more pronounced in AB (mean 1.84 ±0.12mm) compared to Dentium (mean 1.67 ±0.80mm). Augmentation with alloplastic bone has decreased resorption insignificantly constituting 1.56 ±0.07mm compared to 1.68 ±0.08mm. The average width of alveolar crest before ridge expansion was 3.1 ±0.08mm, mean thickness of keratinized tissue was 3.0mm. Mean gain in crest ridge after ridge splitting was 2.88 ±0.07mm. Simultaneous dental implants placement after ridge expansion has the advantage such as reducing costs, time, additional morbidity and less amount of biomaterial.

Conclusions

The method of mandibular alveolar ridge expansion is simple, minimally invasive, with early patients’ rehabilitation. Resorption is minimal and can be accepted compared to the disadvantages of other methods. Predictable outcomes can be obtained if protocol is followed and appropriate cases are selected.

References


Fig. 1. Total bone resorption rate (mm)