

15854 POSTER DISPLAY CLINICAL RESEARCH – PERI-IMPLANT BIOLOGY

Early loading after 4 weeks of C1 implants with a B+ treated surface-effect on marginal bone level

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Background: Implant surface is a key-factor to achieve osseointegration. Surface modifications have been proposed to accelerate the integration process and shorten loading times below 3 mo. in the mandible and maxilla. Some authors suggested that part of MBL (marginal bone loss) might result from disuse atrophy; others reported reduced MBL after implementing shorter healing periods rather than longer ones. The effects of early loading, especially of implants with a B+ surface, on MBL is poorly documented.

Aim/Hypothesis: To evaluate peri-implant marginal bone loss around implants with a B+ modified surface loaded 4 (4 w) or 8 weeks (8 w) after implant placement in the mandible and in the maxilla. Marginal bone loss was compared between both groups at the milestone of 1-year after delivery of the final prosthesis.

Material and Methods: A randomized controlled clinical trial (NCT03059108) was set-up in which single implants were placed according to a 1-stage protocol and randomly assigned to two distinct loading groups- test (4 w after placement) or control (8 w). Implants were followed until the 1-year post-loading milestone. Variables that might affect the MBL were- age, gender, smoking, alcohol consumption, bone type, width of bone crest, soft tissue thickness, width of keratinized mucosa, mesio-distal distance to adjacent teeth and prosthetic abutment height. The distance between the implant to the adjacent teeth, the MBL on the mesial and distal sides and the bone levels of the adjacent teeth were recorded on periapical xrays with the Image J software. Each image was internally calibrated with the known implant diameter. The R software was used for the statistical analyses. The Wilcoxon rank sum test and the general linear model with pair-wise comparisons of means further evaluated by Tukey contrasts were used.

Results: A total of 29 patients (mean age 42, 25-58) received one implant each, 27 in the maxilla, 14 were loaded after 4 w. Change in MBL between placement and loading measured on the mesial (M) and distal (D) sides was statistically significant within each group ($S, P < 0.001$). No difference was observed between groups. From loading to the 1-year milestone, bone loss for the 4 w group was 0.17 ± 0.38 mm and 0.18 ± 0.22 mm on the M and D sides, respectively. For the 8 w group, M marginal bone increased by 0.09 ± 0.44 mm; on the D side marginal bone decreased by 0.13 ± 0.45 mm. Differences between 4 w and 8 w were not statistically significant (NS, $P = 0.24, P = 0.68$, M and D, respectively). Differences between groups at each time point were NS ($P > 0.20$) either. MBL after 1 year of loading was -0.23 ± 0.41 mm and -0.20 ± 0.32 mm on the M and D sides, respectively for the 4 w group; it was 0.00 ± 0.54 mm and -0.18 ± 0.43 mm for the 8 w group. None of the variables affected the MBL in a significant way, for any groups at any time point.

Conclusion and Clinical Implications: Early loading after 4 weeks of C1 implants with a B+ modified surface did not affect the MBL when compared to loading after 8 weeks, for any milestone until 1 year after prosthesis delivery. Within the limitations of the study, no variable under investigation affected the MBL in a significant way, not the soft tissue thickness, not the width of the keratinized mucosa and not the prosthetic abutment height.