

15981 POSTER DISPLAY CLINICAL RESEARCH - PERI-IMPLANT BIOLOGY

Implants with an osteoconductive surface and a moderately rough neck – 3 years of follow-up

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Background: BioniQ® dental implants with an osteoconductive, nanostructured and hydrophilic surface (BIO® surface) enable formation of a functional implant-bone junction. Due to a moderately rough neck, the implants support the connective tissue attachment to the surface. That allows for the assumption of greater marginal bone stability and insertion depth influence on marginal bone resorption.

Aim/Hypothesis: The aim of the clinical follow-up was to evaluate the marginal bone loss of the two-stage intraosseous implants after three years post-loading, as well as the evaluation of the marginal bone response to the insertion depth.

Material and Methods: The study monitors 43 patients (18-75 years) who were treated with a total of 97 BioniQ® dental implants between 18 6 2014-9 3 2015. Bone-level positioning has been preferred and recommended. Based on a radiographic evaluation, the final variance of the insertion depth around the recommended position was described as subcrestal or equi- supracrestal. The implants were covered with soft tissue during the healing period of 10 weeks in both the upper and lower jaw. After that, the second stage of the implantation was initiated. OPG Planmeca ProMax and i. o. RTG Kodak were used for both X-ray analysis and marginal bone level (MBL) measurement after implantation, the second stage of implantation, and dental prosthesis placement; 3, 6, 12, 24, and 36 months after the dental prosthesis placement. The data were processed via Statistica 12 software using the linear mixed-effects model considering the patient as a random effect. The statistical significance was stated on the level of $P < 0.05$.

Results: Mean marginal bone loss is 0.36 ± 0.69 mm after three years in function. Ca two-thirds of the total bone loss occurred from the time of implantation (IM) to the dental prosthesis placement (DP). From DP until a three-year control (DP3 y), the total bone loss was 0.13 ± 0.65 mm. This value is more than ten times lower ($P < 0.05$) than the consensually stated limit for marginal bone resorption after three years in function, that is 1.4 mm. The equi- and supracrestally placed implants ($n = 64$) show lower bone resorption (0.19 ± 0.41 mm) in comparison with the mean marginal bone resorption related to the subcrestally placed implants after three years of following-up (0.69 ± 0.69 mm; $n = 33$). The observed difference was statistically significant ($P = 0.000024$).

Conclusion and Clinical Implications: The three-year results of the BioniQ® dental implant system show total marginal bone loss of 0.36 ± 0.69 mm and 0.13 ± 0.65 mm from implantation and loading, respectively. These are comparable to the best documented dental implant systems on the market. The moderately rough surface on the implant neck supports connective tissue attachment yielding greater marginal bone protection and, thus, lower marginal bone resorption, especially for the equi- supracrestally placed implants.