



BXKIQ ePOSTER CLINICAL RESEARCH – PERI-IMPLANT BIOLOGY

Marginal bone level and biologic width dynamics in tissue-level and bone-level implants

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Background: The BioniQ[®] dental implant system offers both two-stage bone-level (BioniQ[®]) and one-stage tissue-level (BioniQ[®] Plus) implants. The bone-level implants have a short, moderately rough neck; whereas the tissue-level implants have a 1.7-mm-high smooth neck, that may be partly pushed over the bone level. The construction features, as well as the different surgical protocols of both implants, allow for the assumption of different interactions with marginal soft tissue and bone level development.

Aim/Hypothesis: The clinical follow-up aimed to preliminarily evaluate the bone level development with respect to the accessible soft tissue attachment types to the one-stage tissue-level and supra-/crestally placed two-stage bone-level intraosseous dental implants after one year post-loading.

Materials and Methods: Within the two implant types comparison, only the patients with thick biotype, treated with cylindrical, 4-mm-wide, platform-switched implants placed in the distal region, and indicated for single and/or connected crowns, were analyzed. Based on that, the 10-membered and 12-membered groups of patients (43–76 years) with 14 bone-level and 13 tissue-level implants, respectively, were compared. OPG Planmeca ProMax and i.o. RTG with RVG Kodak were used for both X-ray analysis and marginal bone level (MBL) measurement after implantation (IM), healing abutment insertion (2SI), and dental restoration attachment (DR); and 3, 6, and 12 months thereafter (3mo, 6mo, 1y). The biologic width was determined by subtraction visible tooth crown dimensions from the radiographs. 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: The two-stage bone-level BioniQ[®] dental implants resulted in mean marginal bone resorption of 0.16 ± 0.61 mm after one year in function, whereas the one-stage tissue-level BioniQ[®] Plus dental implants showed marginal bone growth of 0.05 ± 0.13 mm after the same time period ($P = 0.24$). Biologic width remained stable in both types of dental implants. This functional barrier enables an effective protection of the hard tissue below from the time of dental restoration attachment until the first year in function. The 3-mm-thick biologic width seems to provide an epithelial attachment and connective tissue contact to the smooth-necked tissue-level implants from the early stages of implantation; whereas a stable connective tissue-fixture-attachment may be created around the bone-level implants in a longer time.

Conclusions and Clinical Implications: The tissue-level implants showed slight marginal bone growth in contrast with the bone-level implants that showed bone loss. The difference, however, is not statistically significant.

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Keywords: marginal bone loss, bone-level implant, tissue-level implant, biologic width, soft tissue attachment