16317 ORAL COMMUNICATION
CLINICAL INNOVATIONS

Bone changes above implant neck of subcrestally placed implants. Early report from RCT of implant and abutment level treatment

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Background: When implant is placed subcrestally, we have an unique situation, due to the presence of the bone above the implant neck. The changes of that bone are called ëbone remodelingí, which differs from ëbone lossí, involving bone changes below the implant neck. It is suggested that moving the restorative steps from the implant level to the abutment, reduces abutment disconnection (AD) and decreases remodeling of bone, situated above implant neck.

Aim/Hypothesis: To compare changes of the bone above the implant abutment junction after final crown delivery between, 1) implants with crowns mounted on a Ti-base fixed to the implant neck that underwent 4 ADs, 2) implants with crowns fixed to a 1-time abutment torqued to the implant during surgery that had no AD.

Material and Methods: Bone level implant with platform switching (V3, MIS) were placed 1.5–2.0 mm subcrestally in 56 patients, which were enrolled in the study after application of inclusion criteria. After randomization, in test group 3 mm height intermediate multiunit abutment (CONNECT) was torqued to implant during the surgery, while other implants received regular healing abutment and served as a control. After 2 months of healing and 1 month of provisionalisation period, final Zr-based screw-retained restorations were delivered to both groups. After 1 month, post-delivery bone levels above implant necks were calculated and compared. Bone remodeling was measured as a first bone-to-Ti base or abutment contact above the implant neck. Mann-Whitney U test was used, statistical significance level was set to 0.05.

Results: 12 men and 44 women (mean age 46.1 ± 2.8 years) had 38 mandibular and 18 maxillary sites rehabilitated. All 56 implants integrated and were available for the evaluation in 1-month post-restorative evaluation. Implants in test group (multiunit abutment level) had 0.9 ± 0.48 mm (range, 0.35 to 2.2 mm) of bone remodeling at post-delivery evaluation, while control group with direct implant restoration had 1.61 ± 0.56 mm (range, 0.55 to 2.65 mm), making this difference statistically significant ($P < 0.0001$, Mann-Whitney U-test).

Conclusion and clinical implications: Within limitations of post-delivery evaluation, it can be concluded that use of intermediate multiunit abutment (CONNECT) significantly reduces crestal bone remodeling around subcrestally positioned implants.