



Bone changes above and below the implant-abutment junction of subcrestally placed implants after 1 year post-delivery from a RCT.

ABSTRACT n° 78ZHP

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Background:

In subcrestally placed implants, there is a presence of the bone above the implant neck. The changes of that bone are called 'bone remodeling', which differs from 'bone loss', 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), disturbance of the peri-implant seal and decreases bone remodeling, situated above implant neck, and bone loss, regarding the bone situated below implant neck.

Aim/Hypothesis:

To compare bone changes above and below the implant-abutment junction after 1 year post-delivery between, 1) implants with crowns mounted on a Ti-base affixed to the implant neck that underwent 4 ADs, 2) implants with crowns affixed to a 1-time abutment (torqued 30N on surgery) that underwent no ADs.

Materials and Methods:

A randomized controlled prospective clinical trial was set up with 74 patients receiving a 'bone level' implant with platform-switching (V3, MIS) in mono-odontulous sites in posterior mandible and maxilla. All implants were placed 1.5 mm subcrestally. In the test group, 3 mm 1-time abutment (Connect) was torqued during surgery at 30 Ncm. In the control group, implants received a regular healing abutment. After 2mo. of healing, temporary crown was prepared. In the test group, impression steps did not disturb the peri-implant seal; in the control group, the peri-implant seal was disturbed. After 1mo. loading, a final Zr-based screw-retained crown mounted on a titanium base was delivered to both groups. 1 y. after final crown delivery, bone levels were measured and compared with the Mann-Whitney U test ($p < 0.05$). Bone loss was measured at the first bone-to-implant contact below the implant neck, while bone remodeling was measured as a first bone-to-Ti base or abutment contact above the implant neck.

Results:

Fourteen men, 28 women (mean age 48.3 ± 3.4 years) had 23 mandible and 19 maxillary implants evaluated after 1 year. In the test group (n=24), bone loss after 1 year was 0.06 ± 0.17 mm (range, 0.0-0.6 mm). In the control group (n=18), implants had 0.27 ± 0.58 mm (range 0.0-2.4 mm) of bone loss, difference statistically not significant (p=0.322). Implants in the test group after 1 year had 0.73 ± 0.40 mm (range 0.0 - 1.65 mm) of bone remodeling, while control group had 0.83 ± 0.47 mm (range 0.05-1.80 mm), difference was not statistically significant (p=0.453). In the control group bone loss after 1 year compared to early bone loss after final crown delivery was reduced by 0.325 mm (p=0.013), while in the test group it remained stable (0.00 mm; p=0.279) Bone remodeling also did not change statistically significant in both groups (test group; p=0.583; control group; p=0.948) compared to early and 1 year remodeling after final crown delivery.

Conclusions and Clinical Implications:

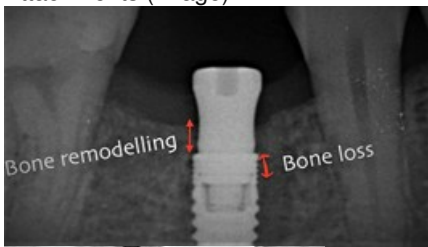
Within the limitations of this study, it can be concluded that using the 1-time Connect abutment that turns 'bone level' implants into 'tissue level' implants can reduce bone loss and bone remodeling after 1 year around conical connection implants placed 1.5 mm subcrestally, although the difference was not statistically significant. Further studies are needed to confirm that.

Acknowledgements:

Attached files:

[Pièce jointe PDF 1](#) Clinical and X-ray photos

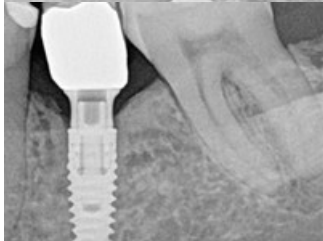
Attachments (Image) :



Bone loss and bone remodeling explanation



Connect-abutment 1 year post-delivery



Implant level regular Ti-base 1 year post-delivery

DECLARATION OF CONFLICTS OF INTEREST

Conflicts of interest in the last three years, with the following companies :

- Clinical research / scientific work : No
- Consultant, expert : No
- Courses, trainings : No
- Advertising material : No
- Invitations to national or international conventions : No
- Shareholding : No
- Possession of a patent or inventor of a product : No