

New Osseodensification Implant Site Preparation Method to Increase Bone Density in Low-Density Bone: In Vivo Evaluation in Sheep

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Purpose: The aim of this study was to evaluate a new surgical technique for implant site preparation that could allow to enhance bone density, ridge width, and implant secondary stability.

Materials and Methods: The edges of the iliac crests of 2 sheep were exposed and ten 3.8×10 -mm Dynamix implants (Cortex) were inserted in the left sides using the conventional drilling method (control group). Ten 5×10 -mm Dynamix implants (Cortex) were inserted in the right sides (test group) using the osseodensification procedure (Versah). After 2 months of healing, the sheep were killed, and biomechanical and histological examinations were performed.

Results: No implant failures were observed after 2 months of healing. A significant increase of ridge width and bone volume percentage (%BV) (approximately 30% higher) was detected in the test group. Significantly better removal torque values and micromotion under lateral forces (value of actual micromotion) were recorded for the test group in respect with the control group.

Conclusion: Osseodensification technique used in the present *in vivo* study was demonstrated to be able to increase the %BV around dental implants inserted in low-density bone in respect to conventional implant drilling techniques, which may play a role in enhancing implant stability and reduce micromotion.