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Topical Applications of Vitamin D on Implant Surface for Bone-to-Implant Contact Enhance: A Pilot Study in Dogs. Part II" *

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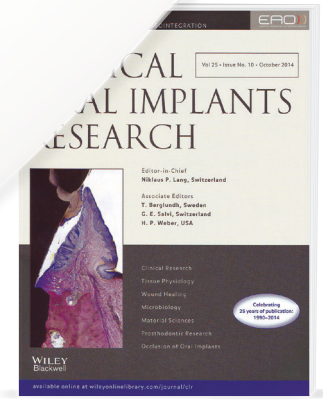

*Salomó-Coll O, Maté-Sánchez de Val JE, Ramírez-Fernandez MP, Hernández-Alfaro F, Gargallo-Albiol J, Calvo-Guirado JL. Topical applications of vitamin D on implant surface for bone-to-implant contact enhance: a pilot study in dogs part II. Clin. Oral Impl. Res. 00, 2015, 1–8 doi: 10.1111/clr.12707

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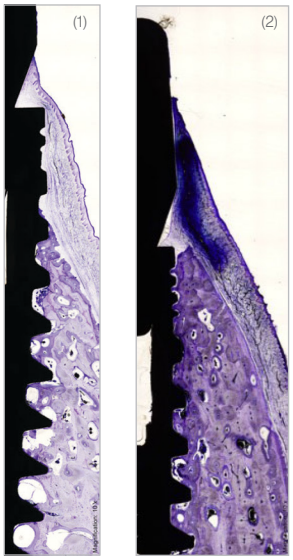

Fig 1. Buccal ground section of an untreated implant (CI) after 12 weeks of healing. Hematoxilin eosin stain, original magnification x10.

Fig. 2. Buccal ground section of a test implant (MI) after 12 weeks of healing. Hematoxilin eosin stain, ori-ginal magnification x10.

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SUMMARY.

Objectives

The aim of this study was to evaluate the effect of topical application of vitamin D over implant surface, placed immediately to the extraction, throughout histological and histomorphometric analysis of peri-implant tissue.

Material and methods

Six American foxhound dogs were used in the study. Mandibular premolar distal roots were extracted. Twenty-four immediate conical C1 implants (MIS®, Barlev, Israel) were randomly assigned to the distal site on each site of the mandible in three groups: (Group CI) 12 titanium implants alone; (Test Group DI) 12 titanium implants supplemented with vitamin D. Prior to implanting, test implants (DI) were submerged in vitamin D 10% solution. No treatment was applied at control implants (CI). After 12 weeks, animals were sacrificed. Block sections were obtained and processed for mineralized ground sectioning. Bone-to-implant contact (Total BIC and BIC%), new bone formation (NBF), interthread bone (ITB), and histological linear measurements (HLM) were analyzed.

Results

At 12 weeks, all implants were clinically stable and histologically osseointegrated. BIC evaluation showed Total BIC mean and SD values for DI (48.96 ± 2.14), CI (44.56 ±1.75) ($P < 0.05$), BIC% DI (43.59 ± 0.98), and CI (42.67 ± 9.26) ($P > 0.05$). For interthread bone formation, values were as follows: DI (15.21 ± 3.87), CI (14.79 ±1.45) ($P > 0.05$), no statistically differences. Regarding peri-implant new bone formation, no statistically differences could be found between the two groups DI (31.87 ±1.23), CI (27.18 ± 2.38) ($P > 0.05$). For linear measurements, test group (DI) showed statistically significant less buccal crestal bone loss (CBL) DI (0.37 ± 0.12)*, CI (1.26 ± 0.8) ($P < 0.05$), and vitamin D implants showed less lingual junctional epithelium DI (1.58 ± 0.43)*, CI (2.18 ± 0.48) ($P < 0.05$). No differences were observed in the buccal mucosa.

Conclusions

With the limitation of animal studies, topical application of vitamin D on dental implants could reduce crestal bone loss and increase 10% more bone-to-implant contact at 12 - week follow-up period.