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"Bovine bone screews x bone onlays": An alternative to apposicional bone graft. Histologic study in beagle dogs

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Abstract

Disability of bone tissue during oral rehabilitation treatment requires the inclusion of effective techniques for bone regeneration for the future installation of dental implants. Comparing techniques already described for this purpose, such as autogenous bone graft onlay, led to the development of new bovine bone screw with objective of increase bone volume in areas of poor bone architecture.

This study analyzed bone formation using bovine bone screws for increased dimensional ridge alveolar bone for future implant placement. A comparative analysis of bone response with the use of bovine cortical bone screw with autogenous bone graft onlay, already described in the literature, was performed.

Eighteen tibia of female beagles received surgically four bovine bone screws and an autogenous bone graft onlay. Flurochromatic bone markers were injected at different times post surgery to monitor the process of bone formation. Histological sections were processed and analyzed by fluorescence microscopy in periods of 2, 4 and 6 months postoperatively.

The presence of new bone formation was observed in both techniques (bovine bone screw and onlay) by substitution, suggesting the presence of osteoinduction and osteoconduction events.

Comparatively, the autogenous bone graft onlay has been replaced after integration on receptor site faster than bovine bone screws. For 2, 4 and 6 months postoperatively, there was an increase in bone formation with bovine bone screws, statistically significant compared to autogenous bone grafts onlay. Due to lower bone resorption after integration at the receptor site and increased volume of newly formed bone, this study suggests the use of bovine bone screws as a better alternative of bone grafting to maintaining new bone architecture.

Biography

Pontual has completed his MS from the University of São Paulo and Ph.D. from the Federal University of Santa Catarina, both in Brazil. He is Associated Professor and Oral Implantology Program Coordinator at the UFES, Brazil and effective member of the scientific editing board of two Brazilian Journals of Implant Dentistry. He has Author and coauthored several articles published in various peered journals and has lectured extensively since 1998. Author of the book "Platelech Rich Plasma and Growth Factors in Implant Dentistry", Santos Ed. 2002.