Implanted bioceramics within regenerating bone tissue studied with synchrotron microtomography and 3D image analysis

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The utilization of autogenous bone grafts is an established technique in implant dentistry for bone reconstruction. But within recent years the concept of guided bone regeneration (GBR) using biomaterials as bone substitutes (bioactive calcium phosphate ceramics) has become a predictable and well-documented surgical approach. We applied synchrotron microtomography (µCT) and subsequent 3D image analysis in order to quantify bone formation and biodegradation of the bone substitute material in three dimensions. Our results are compared with histological studies