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The Added Value of a Collagenated Thermosensitive Bone Substitute as a Scaffold for Bone Regeneration

I. About

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Collagenated bone substitutes have been shown to significantly improve bone regeneration by enhancing vascularization and stem cell recruitment. Recently, a thermosensitive collagenated bone substitute has been released (GTO®). As indicated by the manufacturer, it is composed of collagen-containing granules and a hydrogel made of a thermosensitive polymer which also contains collagen I and III. Once applied into the bone defect, it jellifies at body temperature, avoids the granules collapse and maintains the space for bone regeneration without volume loss. In this presentation, the interaction of GTO with bone marrow mesenchymal stem cells, periodontal ligament cells, and endothelial cells will be presented. In particular, the angiogenic and osteogenic potentials of the thermosensitive bone substitute will be highlighted and compared to those of anorganic (Bio-Oss®) and to those of another collagenated bone filling material (Gen-Os®). A quantitative measurement of collagen release will be presented and the added value of collagen in the bone substitutes will be detailed.