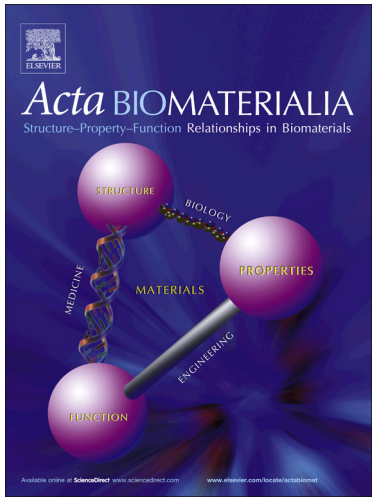

Full length article

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In vivo response to a low-modulus PMMA bone cement in an ovine model

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Abstract

Poly(methyl methacrylate) (PMMA) is the most commonly used material for the treatment of osteoporosis-induced vertebral compression fractures. However, its high stiffness may introduce an increased risk of adjacent vertebral fractures post-surgery. One alternative in overcoming this concern is the use of additives. This presents its own challenge in maintaining an adequate biocompatibility when modifying the base cement. The aim of this study was to evaluate the *in vivo* biocompatibility of linoleic acid (LA)-modified acrylic bone cement using a large animal model for the first time, in order to further advance towards clinical use. A worst-case approach was used, choosing a slow-setting base cement. The *in vitro* monomer release from the cements was also assessed. Additional material characterization, including mechanical tests, are summarized in Appendix A. Unmodified and LA-modified cements were injected into a total of 56 bone defects created in the femur and