Reviewer's report

Title: Microstructure and biomechanical characteristics of bone substitutes for trauma and orthopaedic surgery

Version: 2 Date: 29 November 2010

Reviewer: Volker Alt

Reviewer's report:

The articles reports on the microstructural and biomechanical details of 9 different bone substitute materials. The methods for micro-CT scanning and biomechanics are adequately presented. The derived results from the testing methods show important structural differences between the different materials and provide the reader with relevant information for these materials.

The authors should, however, try to relate the tested microstructural and biomechanical details to implications for the clinical use for the respective product. For each product, suitable and unsuitable clinical indications should be given based on the reported structural properties in combination with published in vivo data for the respective product in the literature, e.g. tibia plateau fractures with high biomechanical demanding or bone graft extender for large non-union defects etc. Only this will help the surgeon to clearly use the provided information for decision making in the choice of the best material.

Furthermore, the following minor changes should be made. English langugae should be corrected in the following sentence: p.4, second paragraph: "Alternative sources..."; and

the word "pasta" should definitely be changed into "injectable paste" throughout the manuscript.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.