Reviewer’s report

Title: Topical Zoledronic Acid decreases Micromotion induced Bone Resorption in a Sheep Arthroplasty Model

Version: 1 Date: 20 Aug 2017

Reviewer: Per Aspenberg

Reviewer's report:

This is well designed, performed and reported. I have no methodological critique, but some questions.

1. Was the piston still movable at harvest? This leads to next question:

2. Could it be that shearing forces at the cement-bone interface are unrealistically high, since it seems that all load at weight bearing is transformed into shearing here? A simple mechanical analysis (if not already done) could say if loading conditions are comparable to e.g. an acetabular cup.

3. Is a 50 micron fibrous layer to expect also without micromotion? (I guess not, according to ref 8)

4. What could the consequences of a difference in fibrous layer thickness be for stability? Mechanically it should be a big difference, right? Is reduction to 50 mikrons good enough??

5. It might be worth noting that in ref 15 (Schilcher et al 2016) the local bisphosphonate reduced peri-implant zones around acetabular cups, similar to this study. Also, there is another RSA trial with local bisphosphonte and reduced migration in knees (Hilding Aspenberg 2007).

6. Talking on RSA. What is the connection between RSA, zone width and inducible micromovement? Hilding wrote a paper on migration ad inducible movement long ago.

As you can see, I think there are more interesting points to make in the discussion.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes
Are the conclusions drawn adequately supported by the data shown?  
If not, please explain in your comments to the authors.

Yes

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I am able to assess the statistics

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I have shares in ADDBIO, a company developing bisphosphonate coatings for implants

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