Reviewer's report

Title: High resolution imaging of the osteochondral unit in a translational model of articular cartilage repair at 9.4 Tesla MRI

Version: 1
Date: 7 January 2015

Reviewer: Marco Demange

Reviewer's report:

Major Compulsory Revisions
none

Minor Essential Revisions

I - In the method section, it is important to state if the calcified cartilage was properly removed in all cases.


III - In the publication “Orth P, Goebel L, Wolfram U, et al. Effect of subchondral drilling on the microarchitecture of subchondral bone: analysis in a large animal model at 6 months. Am J Sports Med. 2012;40(4):828-836.” The authors observed that Subchondral drilling led to the formation of subchondral bone cysts (63%) and intralesional osteophytes (26%). Please describe If it is the same rate by 9.4 T MRI observation or discuss these data.

Discretionary Revision

I – Authors should consider and discuss that this animal model (as well as most animal models for cartilage repair) are acute lesions with very few chronic changes to osteochondral unit before the surgical intervention. Ideally, the cartilage defect model should be sub-acute, as it would be more similar to human problems. It means that having an acute defect, leave it for some weeks, and then performing the cartilage repair (drilling) procedure would be more similar to “real world problems”. Anyway, this is just a comment authors should consider in future researches.

II - there is lack of control group, which means, only defect with no cartilage repair (drilling) procedure.
III - Microfracture is performed more frequently compared to drilling in a surgical perspective in humans. Authors should discuss the option for drilling. I imagine that reproducibility and standardization of the procedure may have driven this choice. This may also be explained in the main study protocol, as “The samples were part of a study on experimental osteochondral repair in a translational large” 1. Orth P, Goebel L, Wolfram U, et al. Effect of subchondral drilling on the microarchitecture of subchondral bone: analysis in a large animal model at 6 months. Am J Sports Med. 2012;40(4):828-836.

IV - Histology evaluation would have been interesting, especially analyzing cartilage repair in comparison to imaging analyses.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I declare I do not have conflict of interest.