Reviewer’s report

Title: The effect of cartilage and bone density of mushroom-shaped, photooxidized, osteochondral transplants: an experimental study on graft performance in sheep using transplants originating from different species

Version: 1 Date: 10 June 2005

Reviewer: Gerjo van Osch

Reviewer’s report:

General

This is a clearly written manuscript on a very interesting subject. It is of clinical and scientific importance to understand the role of differences in bone architecture and properties on the performance of a graft. There are a few points that should be adapted to make the conclusions more sound.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

The conclusion is not fully appropriate. It is not proven in this study that the equine grafts perform better because the structure of the bone is denser and it has better mechanical properties.

In the introduction, the discussion and in the abstract the authors mention that they use the grafts of different origins in order to have bone of different densities. They should at least show that this is indeed the case and also show the differences in densities (and mechanical properties maybe) between these grafts.

The histological scores were averaged. Although one can argue if this is valid, I can understand that this increases the sensitivity. However, for statistical analyses they should use a non-parametric test (Friedman instead of ANOVA)

It is not clear whether the bone seen on histology is bone from the graft (dead bone) or remodelled living bone. This information should be provided more clearly. I expect it to be bone of the graft because in the discussion it is stated that repopulation with new cells was low. This is an important point because if it is graft bone, fast resorption can happen later on, having a negative effect on function.

In this respect, I also have the impression that the cartilage is not replaced by living, host cartilage. Altogether the clinical usefulness of the method in the long term is doubtful. The authors should at least make a statement on this problem in the discussion.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

The manuscript is written clearly in general. The overall goal of the study should be clarified at the
end of the introduction: Is it to find the best (allog) graft for implantation, or to evaluate which parameters are of importance for success of a graft?

In description of the macroscopical evaluation the number of grafts that were sunk in the defect and the number of grafts in excellent position does not match with the figures in Table 4.

In Table 5, the percentage of grafts with lesion in the BN group should be 62.5% instead of 50%.

In the labelling of the figures mistakes were found. The use of indication A and B for figure 3 and 5 will solve the problem.

Figure 7 does not convince me on the repopulation of cells. It is not clear what should be visible. Maybe another staining (like the use of H&E) would help.

In the conclusion the sentence "The subsequent slower resorption of the graft during the process . favourable to overall graft survival and performance" should be modified by adding "after 6 months".

Discretionary Revisions (which the author can choose to ignore)

Make clear in the abstract what the difference is between the two cleansing procedures.

The figures in the results section of the abstract make no sense if the scale is not known.

The histological scores where divided in regenerative and degenerative aspects. This is needless. In fact it is a bit confusing in the tables.
In this respect it can also be discussed whether the absence of osteoclasts is indeed good and should be qualified as absence of degenerative changes. It might also indicate a total absence of regeneration, which can be seen as negative.
The presence of proliferating chondrocytes everywhere is seen as positive, which can be discussed too. I would therefore advice to remove the indication "a" or "b".

Table 1 could be discarded. It contains no new information. If not, the order of the groups is different from that used in Tables 4 and 5, this is confusing.

The legend of Table 4 should contain more information.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:
I declare that I have no competing interests