Reviewer’s report

**Title:** Torsional stability of interference screws derived from bovine bone - a biomechanical study

**Version:** 5 **Date:** 8 January 2010

**Reviewer:** Jon Olav Drogset

**Reviewer’s report:**

Review of the manuscript:

Torsional stability of interference screws derived from bovine bone – a biomechanical study

1. Is the question posed by the authors well defined?

“The aim of this study was to investigate the torsional stability of bioabsorbable interference screws derived from bovine compact bone.”

Investigate or compare? Should these screws also have been compared with e.g. PLLA screws?

2. Are the methods appropriate and well described?

“The BC interference screws were produced from bovine tibial diaphysis by the department of precision mechanics of our institution”

Was a firm part of the bone selected to improve the results?

“The screws were not cannulated, rounded at the top and had a hexagon head for screwing in.”

Rewrite to avoid misunderstanding.

“Biocompatibility and biomechanical integrity has been demonstrated.”

What tests? Complement activation? MRI?

“and transferred into an Excel® table (Microsoft, Redmond, USA) for evaluation.”

Shoud be deleted.

Torsional stability with porcine knee specimen

“A thread was cut into the drill channel, the graft was positioned into the channel and fixed with an 8 mm BC screw (hexagon head) under a pretension of 60 Newton (N).”

Was only this type of screw used in this part of the experiment?
“Statistical evaluation
Descriptive analysis was performed by determination of mean values and standard deviations, minimum and maximum values as well as the 95% confidence intervals.”

P-values should be added.

3. Are the data sound?

“Interference screws derived from bovine compact bone were tested. Self-made interference screws (BC) with different diameters (7 mm, 8 mm, and 9 mm) as well as an industrially produced 8 mm bovine compact bone screw (Tutofix®) were used. Of each type of interference screw 5 pieces were tested.”

Small number of screws; especially in the group for comparison (Tutofix®).

Results
The results in table 1 should be transformed to a figure including CI and p-values.

Not necessary to repeat results from table or figure in text

3. Does the manuscript adhere to the relevant standards for reporting and data deposition?

With some exceptions, yes.

5. Are the discussion and conclusions well balanced and adequately supported by the data?

“Comparing our results to the values Costi et al. [27] acquired, we demonstrated that the BC screws have a torsional stability equal to that of most bioabsorbable screws.”

In the discussion the authors compares the results in their study with the results in other studies. These comparisons have limitations. The bone quality may be different, the test medium may differ aso.

“Conclusion:
Screws derived from bovine compact bone are a possible efficient alternative to conventional metallic or bioabsorbable polymer screws for the fixation of BPTB grafts. Further improvement of the design of the screws and the instruments should furthermore improve the biomechanical properties of BC screws. The safety and in vivo performance of products derived from xenogeneic bone should be investigated in further studies.”

The aim of this study was to investigate the torsional stability of bioabsorbable interference screws derived from bovine compact bone. This study does not compare these screws with polymer or metal screws. This should be deleted
from the conclusion. The conclusion should describe any differences found between the screws in the study.

6. Are limitations of the work clearly stated?
Yes.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

“Acknowledgements
The authors wish to thank Dr. Johanna Schmitt for translating the manuscript into English.”

The manuscript is translated into English. Previously published in another language? German?

8. Do the title and abstract accurately convey what has been found?
Yes.

9. Is the writing acceptable?
“focussed”
Please correct.

Specific comments:

“Every year, in Germany about 28,000 anterior cruciate ligament ruptures are treated surgically [2].”

The total number of ACL injuries in Germany would be of interest. What percentage is treated surgically?

“Besides the semitendinosus* tendon, the central part”

*and gracilis tendon should be added.

“Thereby the tibial transplant fixation is of particular importance.”

Equal importance?

“

Level of interest: An article of limited interest

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

Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:

I declare that I have no competing interests'