Author's response to reviews

Title: Characterization of a rat osteotomy model with impaired healing

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Author's response to reviews: see over
Dear Sir or Madam,

Let me thank you and the referees for the helpful comments, improving the quality of our manuscript.

Concerning the remarks of J. Lane, we cited the paper of Hak (Kokobu et al., 2003) [Ref. 31] and discussed his results in the revised version of the manuscript on page 10, lines 19-22.

Also, in order to highlight the aim of our study, we inserted the comment of J. Lane indicating our model as excellent to test enhancing agents in the Conclusions of the Abstract (page 1, line 29-30).

Unfortunately our study could not include micro-CT, such investigation is planned for the future.

Concerning the general comments from S. Shefelbine:

1. We minimised the description of the fracture model in the Methods section (revised version: page 4, lines 18-20)
2. We substituted Figures 2 a and b by Table1; Figures 4 c, d and e by Table 2; Figures 6 b, c and d by Table 3; Figures 7 c, d and e by Table 4; Figures 8 c, d and e by Table 5. This point is also addressed in the specific comments (9.).
3. We specified in the Methods section to what torsional strength relate: Exactly to the difference of intact and osteotomized tibiae in the same animal (page 4, line 28-29 and page 5, line 6-8).
4. We mentioned in the Discussion (page 12, line 28-30) that local infection in some animals may be a contributory factor for nonunion, but aseptic inflammation may have the main impact.

Specific comments:

1. We deleted the term “trabecular bone” or replaced it by “woven bone” throughout the manuscript.
2. We corrected the text as indicated by the referee. However, we want to mention in this context, that our manuscript was copyedited by a professional copyediting service before submission to *BMC Musculoskeletal Disorders*.
3. We agree that there is no need to mention “intramembranous” (deleted, page 2, line 24).
4. See above (2.).
5. Correction made on page 2, line 28 to page 3, line 1.
6. “the latter” was replaced by “all factors”.
7. “corticalis” was replaced by “cortical bone”.
8. See above (1. General comments).
10. These values of torsional strength in fractured animals at the level of previous bone defect were reported in reference 23. In a variety of previous studies using the closed fracture model we could show that the torsional strength in control animals at the indicated time points achieves higher values in mean than the contralateral unfractured tibiae (Schmidmaier *et al.* Acta Orthop Scand 2003, 74; Schmidmaier *et al.* Bone 2002, 30; Schmidmaier *et al.* Bone 2002, 31). However, comparative analyses of biomechanical testing methods (torsion vs. bending) are necessary but should be the aim of a separate study.
12. See above (1. Specific comments).
13. Rephrased on page 11, line 30 to page 12, line 1.
14. Correction on page 12, line 3.
15. Up to now, we did not test fracture fragments in vitro. On page 12, line 9-10 we mentioned that we could not exclude minimal variations in stabilization.

16. We mention references 35 and 36 discussing this topic.

We hope, that the revised manuscript is now acceptable for BMC Musculoskeletal Disorders and look forward to your decision.

Kind regards, sincerely
Christine Kratzel