Author’s response to reviews

Title: Analysis of Total Knee Arthroplasty revision causes in a tertiary care hospital in Germany

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Author’s response to reviews:

Thank you for reviewing our paper and the valuable comments for improvement. We have revised the manuscript accordingly. In detail we have done the following changes.

Editor:

1) You should modify the title. A suggestion would be to remove “in a tertiary care hospital in Germany”

   o We modified the title as you suggested.

2) Please report how many patients presented more than one cause of failure. How was the main cause decided?

   o 45 patients (11.2 %) had just one cause of failure, 356 patients (88.6 %) more than one. We added this information in the results.

   o As explained in the methods the cause of revision was determined by the surgeon in the OR report but was reviewed by the authors using all available data. The following hierarchy was used: infection, fracture, implant failure, loosening, osteolysis, wear, instability, restricted range of motion, extensor mechanism insufficiency, allergy and pain.
3) You need to reformulate your conclusion. Remove the first sentence about tertiary care center and improve the second sentence.

   o We reformulated the conclusion.

Reviewer 1:

1) I would like to know if you analyzed patients or knees, there are minor corrections that are specified in the attached file.

   o We analyzed cases / knees (402), not patients (312). We concretized that in the methods and the results.

2) … and correct the number of patients on the tables

   o We deliberately considered cases and therefore we changed the definition not the numbers in table 1.

3) Maybe the time between the first revision and the current surgery could be interesting.

   o Unfortunately, detailed information on the concrete time of failure is not available for all referred patients. That’s why we can not specify that period. We mentioned that in the limitations.

4) Was there any bilateral case? If positive must explain, if negative must be cited.

   o There were 402 TKA revisions in 312 patients. 32 patients have been revised bilaterally (64 surgeries) and 25 knees have been revised more than one time during the investigation period. 313 patients had just one surgery. However, we analyzed TKA.

5) Complications after infection.

   o The information from the cited sources were named.

6) Source for PJI as the most challenging complication after TKA.

   o We added these sources.
7) Table 1: legends and sums.
   o Table 1 was corrected.

8) Table 2: sums.
   o We apologize that mistake. The sums were corrected.

Reviewer 2:

1) The term “primary revision” and “first revision” have been used in the paper. It would be better to use only one term, preferably “first revision”.
   o Thank you. We changed all the terms in “first revision”.

2) Please include references to the claim that registry data “are not very specific and provided from many different persons who might have different judgements for categorizing the revision causes”.
   o We took this information from the registries documentation reports.

3) Your work does not include time to failure, only time to revision. Please include this data or address this point in the discussion. As most patients are referred to your center, time between failure and revision could be source of systematic error.
   o You are right, detailed information on the concrete time of failure is missing, especially for the referred patients. We mentioned that in the limitations.

4) It would be helpful to understand the severity of revisions performed to include the frequency of the type of implant used (condylar vs hinged fs non-conventional/mega-protheses) in early, late and re-revisions, if this data is available.
   We could add this data. However, we are uncertain if this data would add much to the focus of this manuscript, which in our point of view is already quite complex to read. We therefore prefer not to add this data.

5) Alignment was not included in the revision causes, as in some previous papers. This can be so because loosening or instability were the ultimate revision causes in these cases. Nevertheless, this point should be addressed on the discussion.
There were no revisions for isolated malalignment. Cause of revision was always loosening, wear or instability which in some cases was associated with malalignment. As many of the patients were referred, we had not always x-rays after the initial surgery on which alignment could be measured.

6) Table 2: it would be interesting to include time to revision by all combined causes for all patients, early, late and re-revision groups.

   o Table 2 was extended by these data.

7) For clarity in comparing of causes of revision with previously published data, it would be of value to the reader to include a table with causes and time to failure from the current and previous works, including data based on single or multi-center vs registry data.

   o This is quite difficult as in several publications and in registries different causes failure are defined. Furthermore, time to revision is often not reported in detail. We added a figure comparing revision causes between our study and the cited data.

8) Line 183: missing data (xx,yy,zz)

    o We added these data.

9) Line 214: untranslated german word

    o We translated this word. Thank you!