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Scientific editor: Xiu-Xia Song

Dear reviewers, dear dr Song,

Thank you for your consideration of this manuscript.

First of all, we would like to thank you for the comments and suggestions. All the changes are given point by point. The language of our manuscript is polished by an orthopedic surgeon from Australia, who served as external reader. His comments greatly improved the manuscript. The Biostatistics are carefully reviewed by the second author of this manuscript, who has extensive experience on this topic (see reference 15 & 16). For this re-submission we followed the "Format for Manuscript Revision Case Control Study" and the "Guidelines and Requirements for Manuscript Revision-Case Control Study" as send recommended by dr Song.

This manuscript describes original work and is not under consideration by any other journal. This manuscript has an IRB-approval (METC Atrium-Orbis-Zuyd). All authors approved the manuscript and this re-submission. We appreciate your time and look forward to your response.

Best regards, on behalf of mine co-authors

Martijn GM Schotanus

1 RESPONSES TO REVIEWERS

Please revise your article according to the reviewers' comments/suggestions and provide point-by-point responses to each in the letter format specified in the attached files.

Reviewer 1:

1. Need pre and post op pics.

Pre and postoperative pics (Figure 1) are included as recommended by Reviewer 1.

2. In results show how many were mild , moderat and severe.

The severity of OA is added in table 2 as recommended by Reviewer 1

3. Also u cant say it is for prime time use as I am sure u used it for mild case only?

The severity of OA of the included patients was in a range of moderate to severe. The most of the included patients were indicated with moderate OA. The severity of OA is added in table 2.

Reviewer 2:

The authors compared the accuracy of TKA using patient-specific instruments (PSIs) with that of TKA using the conventional technique. In addition, they compared the accuracy of 4 different manufactured PSI TKAs. In conclusion, TKA using PSIs was more accurate than TKA using the conventional method, and no difference in accuracy was found between the 4 different manufactured PSI TKAs. Regarding the PSI TKA that was recently developed, more research studies, including precision, cost, operation time, blood loss, radiation exposure, and long-term survival, should be conducted in order to examine if it confers more benefits to patients than the conventional TKA. The manuscript could add new information on PSI TKA regarding its accuracy.

If the authors can resolve the questions listed below, I would be in favor of the publication of their report.

1. In Table 4, the LFC outliers are 15.78% in the PSG group and 58.33% in the

conventional group. Much more outliers are in the conventional group than in the PSG group, although the means in both groups are almost same. How can the authors explain the discrepancy between the numbers of the outliers and the means of the LFC? Is it because of relatively larger SDs in the conventional group than in the PSG group?

This question is justified and we can imagine why Reviewer 2 is a little bit confused about these outcome. However this is described in the materials and methods section line 21 and 22: "PSG and the conventional surgery are extensively described in previous published studies [5, 6]."

In both mentioned studies [5 & 6], in the conventional group, the outliers were calculated considering an ideal femoral component flexion and tibial component posterior slope of 0 degrees, as the conventional system is designed to obtain this alignment. Thus, from our point of view it is possible to have these alignment with almost comparable mean and SD, which resulted in more outliers in the conventional group.

This is added to the materials and methods section, line 5 on page 7: Conventional rods were used to align the position of the cutting blocks: LFC and LTC were set at 0°.

- 2. Line 15 on page 8: "Outliers of the FFC for the PSG are comparable or better than ..." should be changed to "Outliers of the FFC for the PSG are comparable or less than ..."**

This is changed according to the comments of Reviewer 2.