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Peer Review File

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Reviewer Comments

General comments
Thank you for giving me an opportunity to review your perspective article.
The presented manuscript entitled “Fixed distal femoral resection with a valgus cutting angle of 3° is more appropriate in intra-articular valgus deformity than juxta-articular valgus deformity in total knee arthroplasty.” described the results of clinical outcome of fixed 3°VCA on TKA for vulgus deformed knee. The authors showed the safety and accuracy of a fixed VCA of 3°, and that can be more appropriate in juxta-articular deformity than in intra-articular deformity. Also, the aVCA is a more reasonable predictor of femoral component alignment than the AMA-A, considering the femoral cortex impingement of the intramedullary rod. These results are valuable for the surgeons doing total knee arthroplasty in clinical practice. However, there are several concerns to be addressed in the present manuscript.

Specific comments
Title
・The title appropriately included the results of this study. Could the authors add the study design?
Answer: We described it on line 41.

Abstract
・Please include the study design in purpose or methods sections.
Answer: We described it on line 52-53.

・The sentence ”The demographics and severity of deformities were not different.” Indicates results.
Answer: We described it on line 53-55.

・Replace “evaluated” to “defined”.
Answer: We corrected it on line 57.

・As “juxta-articular group”, please show the numbers of each groups.
Answer: We described it on line 52-53.

Introduction

・Motivation for this study and background to generate this purpose of this study are not matched. Please mention why authors should perform this study more in Introduction section.

Answer: We revised the sentence on line 92-94 and 102-104 to clarify the purpose of this study.

We also described a novelty of our study on line 100-101. Finally, we added a value of our study on line 106-107.

・The authors should introduce the limitation in terms of technique or outcomes of fixed VCA of 3°at present time.

Answer: We described it on line 92-94 and added one more reference of a recent clinical study on line 92.

・The sentence ” The present article was presented in accordance with the STROBE reporting checklist.” should be moved to the Method section.

Answer: We relocated it on line 127-128.

Methods

・” The Press Fit Condylar (PFC) Sigma® or Attune® prostheses (Depuy Synthes, Warsaw, IN, USA) were implanted using posterior stabilized (PS) or constrained condylar knee (CCK) inserts.”, prosthesis information should be moved to surgical procedure section.

Answer: We relocated it on line 130-132.

・Please show how many patients were excluded by these exclusion criteria.

Answer: We described it on line 116-119.

・Line 108: Please show the range of vulgus angle of participants.

Answer: we described it on line 125.

・Line 112: Why did you choose medial parapatellar approach for the vulgus deformed knee? All cased were approached by medial parapatellar approach?

Answer: We described it and cited the reference on line 134-136.

The authors mentioned "All osteophytes were removed". However, excessive releasing and resection of osteophytes at medial tibia might induce looseness of medial side. Please describe the reason or, cite any references.
Answer: We described it on line 147-150 in more detail considering your comment.

・How much thickness did the authors cut for distal femoral osteotomy Were those fixed thickness or depends on patients or deformity? Please mention it.
Answer: We described it on line 139-142.

・Were there any cases that actually caused rod impingement in inserting intramedullary rod?
Answer: We described it on line 385-387 as our limitation.
Unfortunately, the actual rod impingement was not checked intraoperatively because we did not use the intraoperative fluoroscopy.

Results
・Were there any differences between knee osteoarthritis and rheumatoid arthritis? Rheumatoid arthritis influences more on the bone deformity related to bone destruction, that is quite different from that of knee osteoarthritis. Also, were there differences of ratios of IA and JA?
Answer: We described it on line 264-266.

・Was there outlier more than 3 degree of HKA? If yes, please show the detail including Figure.
Answer: We described the proportion of well-aligned femoral component (postoperative mLDFA < 90±3°) and well-aligned knee (postoperative HKA angle <0 ± 3°) on line 228-231 and 280-283. We added the lines out of 3 degree on figure 3.

・The difference of angle between AMA-A and aVCA correlated with the postoperative mLDFA?
Answer: It does not seem critical in this study to analyze the correlation between the difference of angle between AMA-A and aVCA and postoperative mLDFA because our TKAs were performed only with a fixed VCA of 3°.
We will present the results of your suggested correlation analysis in this document, not the manuscript because of the above reason.

<The correlation between the difference of angle between AMA-A and aVCA correlated with the postoperative mLDFA>

Total cases: r=-0.168 (weak correlation), p=0.014
IA group: r=0.076, p=0.432
JA group: r=-0.036, p-0.717

・This sentence ” This finding implies that the larger the difference between the AMA-A or aVCA and a fixed VCA of 3°, the more varus alignment of the femoral component” is confusing. Re-write clearly.
Answer: We revised the sentence on line 287-289.

Discussion
・This section is well written based on the results. Please discuss about the comparison between fixed 3°VCA and individually adjusted VCA.
Answer: We described it on line 351-355.

・Could authors discuss about the accuracy in comparison with navigation system?
Answer: We added the content about accuracy of navigation on line 358-360.

Conclusion
・To say “safe”, please show the data of outlier besides complication.
Answer: We changed the word on line 67 & 393. In this study, there was no complication.

References
・No remarks.

Tables & Figures
・Figures 1A, B: Please add the line at where the authors decided the center of the femur.
e.
Answer: We presented the anatomical axis (line with ‘a’) in the figure 1A and B. As we described on line 176-178, the anatomical axis of the femur was defined as a central line along the intramedullary canal of the middle femur.

・Figure 3: Please add the lines out of 3 degree.
Answer: We added the red dotted lines indicating postoperative mLDFA of 90±3° and postoperative HKA angle of 0 ± 3°