Author’s response to reviews

Title: Risk factors for failure of revision total hip arthroplasty using a Kerboull-type acetabular reinforcement device

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Version: 1 Date: 27 Jul 2017

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Responses to Reviewers: To Dear Reviewer 1: Title
A more cautious formulation should be reconsidered.
Answer: Thank you for your suggestion. We changed the title to “Risk factors for failure of revision total hip arthroplasty using a Kerboull-type acetabular reinforcement device”

Introduction
The introduction is written interestingly and provides a good overview of the topic. Though, the introduction should be shortened. Hypothesis and clinical relevance should be named in the introduction.
Answer: Thank you for your suggestion. We shortened the Introduction and added a hypothesis and clinical relevance as follows: We hypothesized that factors specific to patient status or bone grafting may be predictive of poorer radiographic outcomes after revision THA.

Clinical relevance
• Unlike prior reports, our study analyzed the predictive factors for radiographic failure after revision THA.

Materials and Methods
Line 99 - 103 Please specify the patient inclusion:
* Total collective of revision THA
* Consecutive patients?
Answer: A total of 95 consecutive revision THAs (86 patients) for aseptic loosening using cemented acetabular components with a KT acetabular reinforcement device (KT plate; KYOCERA Medical Corporation, Kyoto, Japan) were performed between May 2000 and March 2012. Exclusion criteria were recurrent dislocations and revision due to infection (8 cases); 10 cases were excluded because of loss to follow-up. Therefore, the data from 77 hips (6 men and 71 women), were included in the analysis.

Figure 3: Please report descriptives for the subgroup analysis.
Answer: Thank you for your suggestion. We performed subgroup analysis. However, the patient background including pre- and postoperative JOA score, BMI, and UCLA score at final follow-up
were not significantly changed according to the bone defect type or type of bone graft. We noted this in the Results. Line 114 Were all surgeries performed by a single surgeon? Answer: All surgeries were performed by three experienced senior surgeons. We mentioned this in Patients and Methods. Line 142 Who classified the acetabular defects? Answer: One senior experienced surgeon (SH) classified the acetabular defect. We noted this in Patients and Methods. Line 156 Was the collective normal distributed, please report. Answer: All data were normally distributed. We noted this in Patients and Methods. Results The results section is very comprehensive. The figure supplement the results and the results are comparable to former studies. Answer: Thank you for your comments. Discussion The discussion properly summarizes the results and connects it to existing studies. Answer: Thank you for your comments. Line 194: "90.9% when re-revision was the endpoint." This number and endpoint has not been described in methods or results. Please include in the other sections or focus on radiologic failure. Answer: Thank you for your suggestion. The core evaluation of this study focuses on the relationship between survival rates for radiological loosening and results according to bone defect or type of graft. Therefore, we deleted the statements about re-revision rate to avoid further complicating this study. Line 238: Please reformulate this sentence. The conclusion should focus on the main finding of the study and state the clinical significance of the present study. Answer: Thank you for your suggestion. We changed the Conclusion as follows: The midterm outcomes of revision THA indicate that type of bone graft and bone defect size may affect radiographic survival rate when using a KT plate. Tables and Figures The tables are helpful in interpreting the data. Please correct the misspellings (Fig 2). Answer: Thank you for your suggestion. We corrected the misspellings (Fig 2). References The references are fine and most of them appear correctly formatted. Answer: Thank you for your comment. To Dear Reviewer 2: Specific Comments: Figure 4: It is clear that the most disastrous category of patients appear to be difficult to achieve results for. However, even for this category the numbers are so small (e.g., 5) that statistical significance is actually meaningless because of the small number of patients compared to category 3 and category 2. Even more questionable is the validity of the observation that use of beta-TCP is statistically significant in failure rate when one looks at the details of the results closely. It is suggested that in order to allow the reader more information about category 3 failures and beta-TCP versus the other two types of bone grafts a more detailed table needs to be created that perhaps even includes the complete data table or the equivalent graph that clearly depicts type of graft versus length of follow-up versus success or failure. It appears that length of time since surgery alone is directly associated with decreasing success rate. Since the average for 5 years is around 95% and the average for 8 years is around 82% and the average for 9 years is 74%. Depicting both factors for this AAOS grade III will be better clarified by the suggested additional table or graph and this will allow the readers a more understandable assessment. Answer: We completely agree with your suggestion. The failure rate may be affected by the follow-up duration. Actually, the mean follow-up duration was longer in the β-TCP group (mean: 8.9 ± 5.0 years) and HA group (mean: 8.3 ± 2.3 years) compared to the bulk allograft group (mean: 5.1 ± 2.5 years). Therefore, we performed survivorship analysis using radiographic failure as the endpoint with the Kaplan-Meier method. The survival rates were not statistically different between the β-TCP, HA, and bulk allograft groups (Figure 3). The survival curves were significantly different between the β-TCP and bulk allograft groups (p = 0.036). We added a new Figure 5 and statements in Methods, Results, and the Discussion. The only other suggestion is that the readers will not be familiar with how the photograph of the strange looking implant fits in the patient. It is suggested that an additional image be provided that is of a