Author's response to reviews

Title: Short-term Functional versus Patient Outcome of the Bi-cruciate Stabilized Total Knee Replacement: Prospective Consecutive Case-series

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Author's response to reviews: see over
We would like to thank all reviewers at this stage for their valuable comments and suggestions which helped us to improve the manuscript. Below please find the point-by-point responses to the reviewer comments. The paper was now professionally copyedited as advised by the Reviewers #1 and #2.

**Reviewer #1: Jakob Klit**

**Reviewer’s report:**

Overall the text is too wordy and needs a thoroughly rewriting to be shortened and clarified. The text needs to be coherent in its use of grammar and spelling. I recommend the use of a professional proofreader and I recommend the use of a more classical scientifically nomenclature; mean/median instead of average, postoperatively instead of after surgery etc.

The paper was reviewed by a professional manuscript editor. We now use “mean” instead of “average” and “postoperative” instead of “after surgery” as advised.

The study reports there results with the Journey knee a BCS TKR.

1. Is the question posed by the authors well defined?

1.1. The study has two aims; well-being and the correlation between function and patient reported outcome (PRO). However they have only a hypothesis regarding correlations of outcome. However the study almost exclusively reports the results, and leaves little focus on the lag of correlation.

**We have extended discussion of the correlation between function and patient-reported outcome.**

2. Are the methods appropriate and well described?

2.1. Materials and Methods paragraph three: The inclusion and treatment needs to be clarified. As I read understand the text; From August 2008 to May 2011 113 consecutive patients were treated with primary BCS TKR. Fourteen patients (12.4%) were subsequent excluded, and had revision surgery. If this is the case, then it is catastrophic and the most interesting result in the text. If this is the case I recommend the study to be published without unnecessary delays

This section was revised. The 13 patients did not undergo a BCS TKA surgery as they required a more constrained TKA. Thus, this “exclusion” took place preoperatively. One further patient, who was treated with a BCS TKA, received an additional supracondylar osteotomy and was also excluded from the analysis.

3. Are the data sound?

3.1. The study needs to present its data in a proper way. First of all are the data normal distributed?

We checked the normality of the data, which was observed in the majority of the studied outcomes. Nevertheless, our study applied the non-parametric Spearman rank-order correlation, which does not require the data to be normally distributed even though our sample size (n=99) would allow the assumption of the normal distribution of the data.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?

4.1. Before clarifying of point 2 and 3, this cannot be answered.

**Please see above.**

5. Are the discussion and conclusions well balanced and adequately supported by the data?

5.1 Before clarifying of point 2 and 3, this cannot be answered.
6. Are limitations of the work clearly stated?

6. It needs to be stated that the study needs a control group.

This paper reports on a prospective case series study. It needs neither a control group as such nor a statement to the effect that it needs a control group. Instead, what is required is a clear characterization of the study design, which we offer.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

7.1 Yes

8. Do the title and abstract accurately convey what has been found?

8.1 That depends on point 2

The paragraph on patient inclusion was revised.

9. Is the writing acceptable?

9.1. See my overall remarks.

The level of interest and my recommendation regarding publication depends on point two. I therefore wish to have this clarified before I comment on that.

Level of interest: An article of importance in its field

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests: I declare that I have no competing interests

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Reviewer #2: YAKUP EKINCI

Reviewer’s report:

Minor Essential Revisions

REVISIONS REQUESTED

1. It seemed inappropriate to number lines individually in each page. Numbering lines from starting page to end will ease to read the manuscript.

   The numbering was amended as proposed.

2. All abbreviations should be spelled out in first use. For example, the statement on the line 10 in the page 4 should be revised as “total knee replacement (TKR)”.

   The mentioned abbreviation was revised as proposed and all abbreviations were rechecked for their first use. We use now TKA throughout the manuscript, as proposed in the following comment.

3. “Total Knee Arthroplasty (TKA)” is more widely used worldwide. Thus, it should be more appropriate to use TKA rather than TKR.
We use now “TKA” throughout the manuscript, as proposed.

4. The manuscript should be reviewed for spelling errors. For example, the word “prostheses” on the line 13 in the page 4 should be revised as “prosthesis”.

At this place in the manuscript we meant “prostheses” in plural. The manuscript was copyedited by a native speaker.

5. Did all 99 patients undergo unilateral surgery? Weren’t there any patient underwent bilateral surgery or did authors select unilateral knees intentionally? If so, this should be mentioned in the patient selection criteria.

The statement was corrected—there were 99 knees treated in 87 patients. We now add:

**Twelve patients underwent two-stage, bilateral surgery.**

6. The reference 23 cited on the line 14 in the page 5 seems pointless since the reference 24 seems sufficient.

The reference 23 was removed and the reference 24 was inserted instead in this sentence.

7. The lines 25-34 in the page 5 should be supported by a reference.

We cite now the following paper, which is the original report on the Knee Society score:


8. References should be reviewed. For example, page numbers are missing for reference 2. Authors should observe spelling.

The references were checked for errors and the conformity of their style to the guidelines of the journal.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:** I declare that I have no competing interests

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**Reviewer #3:** Carlos Lavernia

**Reviewer's report:**

Overall Comments:

Overall, this paper has interesting information and with considerable revisions should be accepted for publication.

Thank you.

Specific comments:
The concept of proprioception needs to be included when this author describes the advantages of bicruciate retaining implants.

We believe the reviewer misunderstood. The BCS TKA system is regarded as an optimized posterior stabilized design providing guided motion. During surgery both cruciate ligaments are resected.

On the methodology portion of the abstract on the paper they need to clarify why so many knees excluded.

Our manuscript editor notes the following: “An abstract must specify the patient inclusion parameters, but brevity being the highest virtue it can, and should, leave any accounting of multiple, patient-specific exclusions to the main text.” We followed his advice, if the reviewer agrees.

The concept of "Patient base outcome" needs to be described better.

Our formulation of patient-based perception of outcome was confusing. We meant in fact that several knee scores based on patient self-assessment have been introduced and are frequently used to obtain patient perception of knee function before and after TKA. This is now stated more clearly in the background of the paper, including citation of the two reports of two scores, which we then explain more in detail in the Methods section.

On line 31 to 34 they stated that 113 consecutive patients were treated by primary BCS TKR implanted by a single surgeon then they go on to say that fourteen patients were excluded, twelve due to serious medial or lateral ligament instability. Did this occur before surgery? Were they not using a BCS TKR in this fourteen patients or did they use the BCS TKR in this patients and they had to revise it? This is most important and this needs to be described. Did they change the plan intraoperatively or did they change because they noticed the clinical finding in surgery?

Please see above as well as the revised paragraph on patient inclusion. Thirteen knees were excluded preoperatively (as they required a more constrained TKA) and one further knee which received BCS TKA was excluded due to an additional supracondylar osteotomy.

Did they damage the media or lateral ligament while preparing the knee for bicruciate total knee replacement? This has to be clarified and it is a key portion of the study.

No. As we mention above the Journey BCS prosthesis is regarded as an improved posterior stabilized knee system.

They need to describe the sizes of the inserts.

This information is now included in the Methods section.

On the result section they need to describe the complications that they had, In how many did the island pull out?

Because the focus of this analysis was to assess the relationship between functional and patient-reported outcome for this prosthesis design, not analyze complications, a detailed analysis of complications and minor and major revisions of this cohort was described in a separate paper, which is currently accepted for publication in BMC Musculoskeletal Disorders; We cite this paper in the Discussion.

They also need to describe the number of months of follow up that they had on each one of their knees. A table with the average of follow up in the different scales needs to be included.

There must be a misinterpretation of our statement in the paper, as we write that the “follow-up assessment was performed 12 months postoperatively”, and the paper analyses these 1-year results.
This means that the mean FU-rate was 12 months with min and max lying ± a couple of weeks around the 12-months mark.

The discussion again propioreception needs to be highlighted, this is one of the key issues with retaining the ligaments.

As noted above, this is a misunderstanding because this TKA resects both cruciate ligaments.

On line 10 to 12 on the discussion they quote a paper that was presented and not published. If they are going to quote that paper they need to describe some of the complications described on that paper. Most readers do not have access to that information and it is the most important point on their discussion.

As also mentioned above, this paper is currently accepted for publication in the BMC Musculoskeletal Disorders (the same journal), and should be published quite soon.

In the summary on lines 28 to 33 they need to include the complication rate, technical complication rate and clinical complication rate.

Please see above.

The diagram included does not really help the readers, that needs to be removed and the table 1 does not help either. The correlations are terrible they do not add to the paper.

We removed the diagram (the figure) as proposed but keep the table. A principal aim of the study was to assess the correlation between patient-reported outcomes and function, which the table reports. Moreover, the correlations are not “terrible,” they are, as correctly characterized in the paper, low to moderate. Also, not only do they not “not add to the paper,” those low to moderate correlations produce this study’s most salient result: better function is not identical to better patient-perceived outcome. We hope an extended discussion of this finding and some rewording elsewhere in the manuscript will help make this more apparent to readers.

On the additional files the writer with the submission this reviewer cannot find additional information that those that was in the paper.

The table 1 was erroneously submitted also as the additional information. This table was removed from the additional information.

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Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.