

Dear Reviewers,

Thank you for the time and effort to thoroughly review our manuscript.

Below, you can find a point-by-point reaction to your remarks. For issues of clarity, we have listed our reactions to your comments in green, and we have included the line number where you can find the adjustment. The given line numbers correspond to the manuscript with track changes.

We hope you agree with the changes we made to the manuscript,

Sincerely, the authors.

#### **REVIEWER 1**

This retrospective cohort study represents the first research of its kind, comparing results on using functional articulating spacer versus a prefabricated spacer, in two-stage revision arthroplasty for periprosthetic infection of the hip. The manuscript is written in an elegant manner; it focuses on an interesting topic, with huge importance for practice and is generally well organized.

+ thank you for your comment.

However, there are some important issues that should be addressed by the authors, in order to improve the manuscript. More attention should be paid to the correct presentation of the data and to details.

Comments/suggestions for improvement:

1. Authors should read and revise their manuscript according to the Guidelines for Retrospective cohort studies, issued by the BPG, found at <https://www.wjgnet.com/bpg/GerInfo/210>. The requested format of the manuscript is not respected, including the references style.

+ thank you for the comment, we have adjusted the manuscript according to your remarks and the abovementioned guideline from BPG.

2. Title contains 19 words, while the maximum admitted is 18. In any case, the title is not correct and should be re-written. The infection eradication rate is not improved with the functional articulating spacers (statistics!).

+ thank you for your comment, we agree this is too strong. We have removed the infection eradication rate from the title (line 1-3).

3. Data about Authorship is missing, but it should be included (affiliations, ORCID numbers, corresponding author etc)

+ thank you for the comment, we have added the ORCID and corresponding author to the title page (line 13-31).

#### **4. Abstract:**

Please use "Background" instead of Introduction, according to the guidelines issued by the Journal.

+ thank you for your comment, we have adjusted this in the abstract (line 33).

Please clearly define the AIM (not only "we retrospectively compared...").

+ thank you for the comment, we have adjusted this in the introduction of the abstract (line 37-40)

#### Methods:

- Please mention whether it was a single or multi-centre study, please mention that it was a retrospective cohort study, please specify study location, please include statistics etc (as requested in the guidelines).

+ Thank you for the comment, we have adjusted this in the abstract methods (line 42-43).

- Please mention also secondary outcomes.

+ Thank you for the comment, we have added the complication risk as a secondary outcome (line 48-49).

#### Results:

- Please show whether the results were statistically significant (include p value). After reading the manuscript, it appears that even if infection eradication rate for functional articulating spacer was higher (93%) than for prefabricated spacers (78%), the results do not reach statistical significance ( $p > 0.05$ ). Therefore, this eradication rate does not appear improved with the functional articulating spacers, contrary to the Title, the Core Tip and the Discussion. This is very important.

+ thank you for the comment, we have extended the results section and added the p values to the abstract results (line 54-65). As mentioned above, we have removed the infection eradication rate from the title (line 1-3).

On the other hand, Patient Reported Outcomes were significantly improved with the functional articulating spacers, as it appears from the main manuscript. This should appear from the Abstract as well. Data about complications (secondary outcome) should be also included in the Abstract, as they are statistically significant and favour the functional articulating spacer.

+ thank you for the comment, we have adjusted the results accordingly (lines 54-65).

- Conclusion should be rewritten, mentioning only the results that reach the statistical significance.

+ thank you for the comment, we have adjusted the conclusion (line 66-71).

- Conclusion includes “less complications” with the use of the functional articulating spacers; but, as I mentioned before, these are not mentioned in the Results. Please correct.

+ thank you for the comment, we agree and have added the complications to the results section in the abstract (line 62-65).

- Conclusion has to be definite and clear; therefore, please replace/delete “seem”.

+ thank you for the comment. Due to the small number of patients and the retrospective nature of the data we tried to soften the conclusion by using “seem to”. We have now removed this from the conclusion as per your suggestion (line 67-71).

The Abstract contains less than 350 words. Please correct. There are enough data to be added from the manuscript.

+ Thank you for the comment, with the adjustment of the suggestions above the abstract now has 385 words (line 32-71).

5. The Core Tip has to be included in the manuscript. In the Core Tip, please remove/replace “seem” and use only results with statistical significance. Data must be correct and precise, highlighting the findings of the whole manuscript. The 2nd sentence is too long (five lines) – please split into two shorter ones.

+ thank you for the comment, we have added the Core Tip (line 79-86).

6. Introduction: please clearly state the aim of the research, at the end of the paragraph.

+ thank you for the comment, we have adjusted the text to mention the aim of the study, similar to the abstract (line 121-123).

Please delete “We hypothesized functional articulating spacers lead to improved patient reported outcome, fewer complications and shorter in-hospital stay, while maintaining a comparable infection eradication rate as compared to prefabricated antibiotic-loaded hip spacers.”, as it has no relevance. The two groups were compared.

+ thank you for the comment, we have removed this sentence from the introduction (line 124-126).

Please describe here the characteristics of the two spacers used in the study and not in the “Intervention.”

+ Thank you for the comment, we have moved the section about spacer characteristics to the introduction (line 110-120).

7. Methods: Please insert in “Data analysis” the p value.

+ thank you for the comment, the p value is inserted in the data analysis section (line 200-201).

8. Results: are generally well presented.

+ thank you.

9. Discussion:

- This paragraph is generally well conceived, although more comparison to the existing literature should be addressed. The authors did not include any research after 2018 (no reference from 2019 and 2020).

+ Thank you for the comment, we agree and we have updated the literature and adjusted the manuscript where necessary (lines 298-300, 322-324, 335-338, 355-356).

- Please revise “Infection eradication rate seemed higher for patients treated with a functional articulating spacer than for patients treated with a prefabricated spacer (93% versus 78% respectively)”, which is not correct, as the result did not reach statistical significance.

+ thank you for the comment, we agree and have adjusted this statement (line 285-287).

- Please revise again the sentence about the better results with the functional articulating spacer in eradicating infection rate, as it is not true (by the end of Discussion).

+ thank you for the comment, we agree and have adjusted this accordingly (line 366-370).

- There is no Discussion about Table 2 (causative infectious agents), therefore at least one short sentence should be included. Otherwise, why to have Table 2?

+ thank you for the comment. We have now also added a short statement concerning this difference to the ‘comparison of the groups’ section in the results. The difference of causative pathogens seen in table 2 and its possible bias were already discussed in the limitations section in the discussion (lines 255-257 and 345-349).

- Limitations of the study are correct.

+ thank you.

10. Please insert the Conclusion.

+ thank you for the comment, we have inserted the conclusion heading (line 363).

11. References should be updated, with those from 2019 and 2020 and written in the requested format.

+ thank you for the comment, we agree and have updated the literature references (lines 298-300, 322-324, 335-338, 355-356). We have also adjusted the references in the text by adding brackets and the reference list by adding PMID and DOI.

## **REVIEWER 2**

This is an interesting manuscript about the comparison of patient reported outcome, infection eradication rate, and complications between functional articulating spacers and prefabricated spacers used in two-staged revision arthroplasty for a periprosthetic joint infection of the hip.

The data have demonstrated that the percentages of patient acceptable system state for HOOS pain, HOOS PS, HOOS QoL, EQ-5D, and EQ-VAS in functional articulating spacers were significantly higher than those in prefabricated spacers. The authors have suggested that all two-stage revision procedures of the hip should be performed with the use of a functional articulating spacers. This manuscript is nicely structured and well written.

+ thank you for the kind remarks.

However, I have one minor comment about this manuscript. Please consider the following comment. (Comment) Page 6, Results, Functional articulating spacer group, line 2, "24 months (range 15-85 months)" Page 16, Table 1, Functional articulating spacer group, Months follow-up (range), "24 (16-85)" Is the one or the other correct?

+ thank you for the comment. The former was correct, we have adjusted the latter in table 1.