Author’s response to reviews

Title: Application of Postoperative Autotransfusion in Total Joint Arthroplasty Reduces Allogeneic Blood Requirements: A Meta-Analysis of Randomized Controlled Trials

Authors:

Weiping Ji (weiping_ji@126.com)
Xianfeng Lin (332645498@qq.com)
Ruoxia Zhang (464370797@qq.com)
Jian Mo (mojianzju@foxmail.com)
Xinyi Teng (982833289@qq.com)
Qiuping Fan (13666867596@sina.cn)
Bo Wang (835510738@qq.com)
Shunwu Fan (shunwu_fan@126.com)
Jianfeng Zhang (838148467@qq.com)
Shuai Chen (cs30518310@163.com)
Kangmao Huang (huangkangmao@zju.edu.cn)

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Author’s response to reviews:

May 20th, 2017

Re: Revision for “Application of Postoperative Autotransfusion in Total Joint Arthroplasty Reduces the Need for Allogenic Blood: A Meta-Analysis of Randomized Controlled Trials”, number BMSD-D-16-01052R1.

James Mockridge, PhD
Editor, BMC Musculoskeletal Disorders
Dear Editor:

We thank you and the reviewers for giving us the opportunity to revise our manuscript again. We have carefully studied the comments raised by the reviewers and editors, and revised the paper accordingly. The following are point-by-point responses to the editors’ and reviewers’ comments. We will submit a clean version of manuscript without track changes or highlighting.

Should you have any questions, please contact us without hesitation.

We look forward to your favorable decision.

Sincerely,

Kangmao Huang, MD
Department of Orthopaedic Surgery, Sir Run Run Shaw Hospital, Medical College of Zhejiang University
3 East Qingchun Road, Hangzhou Zhejiang Province China, 310016
E-mail: huangkangmao@zju.edu.cn
Tel: +86-571- 86006667 Fax: +86-571- 86044817

Point-by-point response
Jashvant J. Poeran (Reviewer#1):
Comment 1: All requested revisions incorporated. However, as a result the manuscript reads a bit uneasy at times. I would request the authors go through the manuscript text again and make sure the flow of the text is not compromised by the included revisions.
Answer: Thank you for your comment. We have gone through the manuscript text and deleted the highlights.
Comment 2: The funnel plots do not show convincing symmetry to me; there seem to be studies lacking in the lower right corner (small negative studies).

Answer: Thank you for your constructive comment. Funnel plots are visual tools based on subjective judgments. The p values of Egger’ and Begg’ tests are both >0.1, thus it is rational to make conclusions that no obvious publication bias is observed. The asymmetry of funnel plots may be caused by small numbers of included studies and the absence of small negative studies, which influenced the analysis power.

Justine Naylor (Reviewer 2):

Comment 1: Regarding excluding studies which used a tourniquet, I don't dispute the fact that tourniquet may make a difference regarding blood loss, what I dispute is that provided all patients in the study got one, you don't need to exclude on that basis. All it means is that studies that used tourniquets vs those that did not may have different rates of transfusion. I don't think your justification is sufficient.

Answer: Thank you for your constructive comment. First, although the tourniquets are widely used in TKA, the benefits and effectiveness are still controversial. For intraoperative bleeding, the use of tourniquet could actually reduce intraoperative blood loss [1-3]. Previous studies reported that using tourniquet in TKA could reduce the total blood loss (total blood loss=intraoperative blood loss + postoperative blood loss) [1], but could not decrease the postoperative and calculated blood loss (calculated blood loss indicates actual blood loss) [1-2]. However, other meta-analysis reported significantly greater postoperative blood loss in tourniquet group compared to the non-tourniquet group [3]. A highly cited paper also reported that the postoperative wound blood loss and the calculated blood loss were significantly greater in tourniquet group than in non-tourniquet group [4]. Thus, the effects of tourniquet on calculated blood loss and postoperative blood loss remain uncertain. As the postoperative autotransfusion is associated with postoperative blood loss, the non-tourniquet surgery may favour autotransfusion or not. We wish to exclude this bias.

Secondly, the use of tourniquet is controlled to make the included studies more comparable. Given the fact that all the included studies use tourniquets and many factors are not adjusted, we want to minimize the clinical heterogeneity by keep the procedure of TKA to be consistent.

Thirdly, we found only one study without tourniquet meets other inclusion criterion [5]. Most orthopaedic surgeons use a tourniquet for TKA, but they performed TKA without tourniquet just for the opportunity to apply intraoperative autotransfusion. Besides, the treatment of control group in this study is not clearly described. It is not a high quality trail that have to be
included. Further studies should be done to identify the effects of tourniquet on postoperative autotransfusion.

In conclusion, we exclude studies without tourniquet due to the clinical heterogeneity and the uncertain effect on transfusion rates between the autotransfusion group and control group.


Comment 2: In Abstract - under conclusions - line 49 - change maintained' to 'observed'.

Answer: Thank you for your comment. We have changed “maintained” to “observed” according to your advice. (Abstract section, line 49, page 4)
Comment 3: Background - line 79 - change 'power analysis in study size' to power analysis for study size...

Answer: Thank you for your constructive comment. We have changed “power analysis in study size” to “power analysis for study size” according to your suggestion. (Background section, line 79, page 6)

Comment 4: Methods - line 118 - change 'adverse events meant complications...' to 'adverse events included complications such as...'

Answer: We quite appreciate your positive suggestion. We have changed “adverse events meant complications” to “adverse events included complications such as” in this study. (Methods section, line 118, page 8)

Comment 5: Results - line 159 - is table 1 meant to be Figure 1?

Answer: Thank you for your comment. The Table 1 is not meant to be Figure 1. Table 1 contains the characteristics of the studies included in the meta-analysis. (Results section, line 159, page 10)

Comment 6: line 245 - change 'whether autotransfusion.....controversial' to "Up till now, whether autotransfusion is superior to regular drainage has been controversial".

Answer: Thank you for your positive comment. We have changed “Whether autotransfusion drainage is superior to regular drainage remains controversial” to “Up till now, whether autotransfusion is superior to regular drainage has been controversial”.

(Discussion section, line 245, page 15)

Comment 7: Line 279 - change 'Finally, the protocol for the SR was not prospectively registered, thus, the transparency of our approach cannot be ascertained".

Answer: Thank you for your positive comment. We have changed “Finally, the protocol is not registered” to “Finally, the protocol for the SR was not prospectively registered, thus, the transparency of our approach cannot be ascertained” according to your advice. (Discussion section, line 279, page 16)