



Reply to the Letter to the Editor

Reply to the Letter to the Editor: Low Albumin Levels, More Than Morbid Obesity, Are Associated With Complications After TKA

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We thank Xue and colleagues for their comments regarding our study. They highlighted several potentially important factors on complications after TKA. As addressed in our manuscript, our study is a retrospective outcomes study. It is our best intention to study many interesting risk factors while maintaining our focus. Therefore, we limited the number of risk factors in our analysis to the most inter-

esting ones to us and other physicians in general, as we believe they are the most representative and thought-provoking risk factors to consider. Still, we conducted further analysis with additional variables, including anemia, duration of surgery, and type of anesthesia (Fig. 1). We hope this can provide a basis for future research.

Regarding the questions posed by Xue and colleagues: First, anemia is a perioperative risk factor for total joint arthroplasty. The definition of anemia

varies significantly, ranging from 10 g/dL to 13 g/dL. National Surgical Quality Improvement Program (NSQIP) data does include one preoperative value of the hematocrit without details related to the surgical date, and there is no information on the postoperative hematocrit within NSQIP dataset. We adopted the definition of less than 10g/dL as anemia, and conducted a multivariable regression analysis. Perioperative medication is an interesting topic. However, there is no data reported in the NSQIP dataset, nor did NSQIP report information on perioperative glucose control.

Second, our study excluded bilateral surgery and emergency surgery from the analysis. Our initial analysis did include revision surgery (3874 out of 56,260 subjects [6.9%]), which might be a limitation of our analysis.

As we move forward, our future studies will focus on the risk factors associated with complications after primary TKA. We believe that increased surgical duration is likely associated with postoperative complications. However, there are many confounding factors that might contribute to prolonged surgical time, including surgeon experience and skill,

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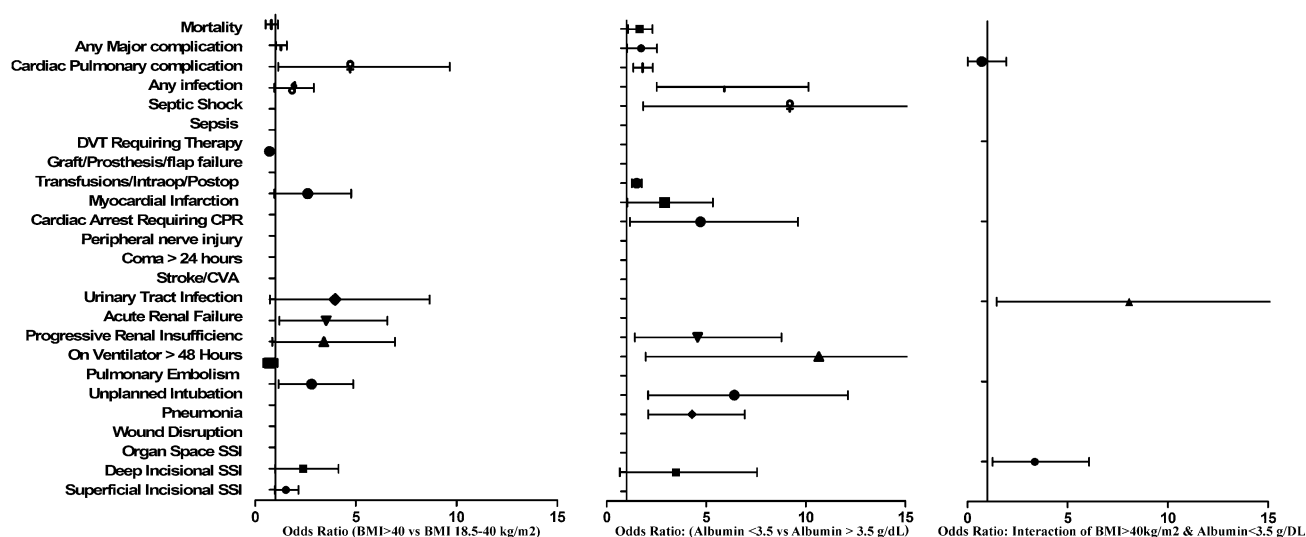


Fig. 1 The results from the revised multivariable regression analysis are shown with additional independent variables, including anemia, duration of surgery, and type of anesthesia.

patient factors, and hospital settings. We categorized surgical duration into two groups (duration less than 135 minutes versus duration equal or longer than 135 minutes).

Data regarding the type of anesthesia is available in the NSQIP data. Our previous study [1] of 16,555 patients suggested that neuraxial anesthesia is associated with lower odds of infectious complications comparing to general anesthesia. To test the effect of type of anesthesia on our regression model, we conducted further regression analysis with the type of anesthesia as an independent variable.

Finally, blood transfusion is recorded in the NSQIP database, and was

included in our previous analysis [1]. Although blood transfusion is not a benign risk factor, the study of its effect is not a simple task especially considering the heterogeneous practice protocols across more than 400 institutions as included in the NSQIP database.

The results of our revised multivariable regression analysis—which included the additional factors of anemia, duration of surgery, and type of anesthesia—identified some differences compared with the initial analysis. Morbid obesity is associated with four out of 21 postoperative complications, and previous analysis showed significance in two out of 21

complications. Hypoalbuminemia is associated with nine out of 21 postoperative complications, and previous analysis highlighted 10 out of 21 complications. There were no other changes to the main findings as we initially reported them.

The revised analysis with additional risk factors also supports our conclusion in our original study.

Reference

1. Liu J, Ma C, Elkassabany N, Fleisher LA, Neuman MD. Neuraxial anesthesia decreases postoperative systemic infection risk compared with general anesthesia in knee arthroplasty. *Anesth Analg.* 2013;117:1010–1016.