Author’s response to reviews

Title: The Risk Factors for Postoperative Cerebral Complications in Patients with Stanford Type A Aortic Dissection

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Author’s response to reviews:

Reviewer #1:
Q1: First of all the authors have excluded more than a third of patients that underwent surgery for a type A dissection in their institution during the study period. As one of the exclusion criteria was lost to follow up it is nearly impossible to make a valid conclusion on the data that the authors present. As lost to follow up is one of the exclusion criteria a Kaplan Meier analysis makes also no sense.

A1: Our study was focus on the affection of surgery itself to the patients with AAD, therefore many cases were excluded from this research to alleviate the interference from the factors that existed before surgery (eg. abnormal preoperative consciousness), and we have added the detail data into the manuscript. Because lost to follow up is one of the exclusion criteria a Kaplan Meier analysis makes also no sense, we deleted the relevant content in this paper.

Q2: Additionally the authors do not give any information on the involvement of the supra aortic branches in the dissection which also might heavily influence neurologic outcome

A2: Thanks for giving us so valuable advice! We have added the relevant information about the involvement of the aortic arch triple-branches (Table 1).

Reviewer #2:
Q1: The authors evaluated the risk factors of postoperative cerebral complications in patients undergoing operation for type A aortic dissection. The manuscript is well-written. However, the number of postoperative cerebral complications is few.

A1: Due to the relatively small sample size, we have made some modification of the statistical methods (eg. Fisher's exact test) to ensure the statistical efficiency.

Q2: Moreover, I think it seems strange to include various cerebral complications because each of them has different cause and mechanism.

A2: All of the various cerebral complications mentioned in the manuscript are very common in the
patients who underwent the surgeries of AAD. Although, the cause and mechanism of these neural complications are not well illuminated, they were strongly relevant with the AAD surgery. Therefore, we showed all of them.

Reviewer #3: Interesting study. Plz respond to the following:

Q1. Pg3: plz add Study period and place in the Abstract section.
A1: Study period and place have been supplemented in the abstract section.

Q2. Pg5: Sc 34-39 : response after surgery is a complex procedure and depends upon many factors other than delayed emergence from anesthesia, so plz reconsider.
A2: Fast-track anesthesia were routinely applied in our department, and most of the patients should be awake within 30 min after surgery. Therefore, the patients whose response to stimulation occurred more than 90 min after the surgeries were recognized as having a delayed emergence from anesthesia.

Q3. Pg9 Sc 28: What is the P value of rcSO2 here?
A3: It meaned that there were significant differences between the two groups in terms of the average value of bilateral rcSO2 at baseline (before surgery). Since the branches of the aortic arch are frequently implicated, the low value of rcO2 at baseline was considered to be a part of the systematic malperfusion in the patients with AAD.

Q4. Pg9-10: " Two cases of ............ after surgery " : plz specify in which group these findings are found.
A4: All of the cases with postoperative cerebral complications came from the PCC(+) group.

Q5. Pg10 : What do you mean by 'observing an ascending trend of mortality' when statistical test found no difference?
A5: It meaned that the mortality of the patients of PCC(+) group was obvious higher than those of the PCC(-) group (16.7% vs 2.7%,P=0.072). However, the P value was not lower than 0.05(as result of the relatively small sample size),and it seemed rigorous to describe the result as “observing an ascending trend of mortality”.

Q6. Pg10: any explanation why PCC+ group spent less money? Was the spending was calculated and matched following scientific principles?
A6: All of the spending of the patients in the hospital were calculated in the hospital account system after discharge. The patients of PCC (+) group suffered from significantly longer duration of hospital and ICU stay, and higher morbility of postoperative pulmonary infection, MODS and gastrointestinal complications were observed in the patients of this group. Therefore, it maked sense that they spent more money in the hospital.
Q7. Pg11: Plz add a little analysis of survival findings between 2 groups.
A7: Because lost to follow up is one of the exclusion criteria a Kaplan Meier analysis makes also no sense, we deleted the relevant content in this paper.

Q8. Pg11-12: plz. Reconsider the comment 'this is due to longer duration of post-op intubation'.
A8: Longer duration of mechanical ventilation has been confirmed to be the risk factor of post-op pulmonary complications for several years. Patients in the PCC(+) group were more likely to be extubated later than those in the PCC(-) group, or even underwent the tracheotomy after surgeries. Therefore, longer duration of mechanical ventilation or intubation possibly played an important role in post-op pulmonary complications including pulmonary infection and tracheotomy. Since the pulmonary infection and tracheotomy could be the reasons of longer duration of post-op intubation, the presentation has been modified slightly in consideration of academic preciseness.

Q9. Pg12 sc39- Pg13 sc12: these factors are true for both the groups, but why they are considered fro PCC+ group only?
A9: Gastrointestinal complications (GC) are not rare after cardiac surgery. The study focused on the prognosis of patients with PCC, it seemed to be superfluous to explain the mechanism of GC in the patients without PCC.

Q10. Pg 13 sc 9-12: contradictory statement. In pg 10, you stated PCC+ group spent less money, here you are saying more, plz correct either.
A10: Thanks very much for correction! The original text has been modified!

Q11. Pg15 sc9 'novel'??
A11: The triple-branched stented graft implantation was an novel surgical treatment around the world, and was first performed in our department (see the detail in the reference No.22).