Peer Review File

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Reviewer A

Comment 1: What was your approach to tissue glue, was it used universally? if so, which one?

Reply: We thank the reviewers for this comment. Accordingly, we have added more information about tissue glue **on Page 9, line 176-179** of the revised manuscript.

The added part about tissue glue **on Page 9, line 176-179** of the revised manuscript is following as "In the modified and conventional prosthesis eversion technique, we routinely sprayed a small amount of fibrin-based tissue glue (Tissucol Duo Quick; 2 ml/set) around the anastomotic sites with a 2-syringe application device and a pressure-controlled spray system to prevent blood leaking".

Comment 2: Did you use cell saver and autotransfusion for the surgeries?
Reply: We thank the reviewers for this comment. Accordingly, we have added more information about cell saver and autotransfusion **on Page 12, line 244-247** of the revised manuscript.

The added part about cell saver and autotransfusion **on Page 12, line 244-247** of the revised manuscript is following as "A cell saver device, the Autolog® autotransfusion system (Medtronic, Minneapolis, MN, USA) is routinely used in patients undergoing open surgical repair of aortic aneurysm, which increases the patient's haemoglobin level and minimizes the risks related to allogenic blood transfusion".

Comment 3-1. Please describe in details the procedural outcomes in dissection patients as divided by eversion and conventional techniques. also did you use femoral cannulation for AADs? did you start with proximal or distal aortic anastomoses in AAD cases?
Reply: This study focused on surgical outcomes in patients with aortic aneurysms. Surgical methods and outcomes for dissection patients will be described in future studies.

Comment 3-2. Did you use DHCA for total arch replacements?
Reply: We thank the reviewers for this comment. Accordingly, we have added more information about total arch replacement **on Page 6, line 109-114** of the revised manuscript.

The added part about total arch replacement **on Page 6, line 109-114** of the revised manuscript is following as "After systemic heparinization, cardiopulmonary bypass

(CPB) was established by intubation of the femoral and/or right subclavian artery and right atrium. After the nasopharyngeal temperature dropped to moderate hypothermia (24-28°C), circulatory arrest and selective cerebral perfusion was performed. After the distal arch repair was completed, the extracorporeal circulation was resumed and warming was started. Root treatment occurred during the rewarming phase".

Comment 3-4: Do you happen to have eversion technique photo/sketch for the distal arch?

Reply: We thank the reviewers for this comment. Accordingly, we have added more information about eversion technique photo/sketch **on Page 8, line 151-155** of the revised manuscript.

The added part about eversion technique photo/sketch **on Page 8, line 151-155** of the revised manuscript is following as "The proximal vascular graft was conventionally anastomosed to the distal ascending aorta or to an arch graft if there was a more extended aneurysm involving the aortic arch. The method of aortic arch reconstruction was based on a study we published previously, which included photographs and sketches of each step of the procedure".

Comment 3-5: Or because FET %% matches exactly TAR %% did you use the arch prosthesis only without eversion.

Reply: We thank the reviewers for this comment. Accordingly, we have added more information about the use of arch prosthesis only without eversion **on Page 9, line 173-175** of the revised manuscript.

The added part about the use of arch prosthesis only without eversion **on Page 9, line 173-175** of the revised manuscript is following as "In the classical Sun's procedure, the 4-branched arch graft could also be anastomosed proximally to the STJ in an end-to-end fashion, which didn't involve the prosthesis eversion technique".

Comment 4: Any reinterventions during follow-up?

Reply: We thank the reviewers for this comment. Accordingly, we have added more information about the reinterventions during follow-up **on Page 11, line 219-220** of the revised manuscript.

The added part about the reinterventions during follow-up **on Page 11, line 219-220** of the revised manuscript is following as "There was no aorta-related reintervention in either the conventional group or the modified group".

Comment 5: How do you explain aortic root disease diagnosis and surgery if aortic root > 45 was excluded.

Reply: We thank the reviewers for this comment. Accordingly, we have added more information about the aortic root disease diagnosis and surgery **on Page 5, line 87-93** of the revised manuscript.

The added part about the aortic root disease diagnosis and surgery **on Page 5, line 87-93** of the revised manuscript is following as "The surgical indication for aortic diseases was determined by the maximum aortic diameter. These recommendations could be found in the 2021 European Society of Cardiology/European Association for Cardio-Thoracic Surgery Guidelines for the management of valvular heart disease. In this study, the indication for intervention was the maximum diameter of ascending aorta > 55 mm. The exclusion criteria were: Marfan syndrome, intimal tears extended to the aortic annulus, connective tissue disorders, or aortic root diameter > 45 mm.

Comment 6: What was your approach to aortic root surgery? valve sparing or non-valve sparing.

Reply: We thank the reviewers for this comment. Accordingly, we have added more information about the approaches to aortic root surgery **on Page 6, line 117-121 and Page 8, line 122** of the revised manuscript.

The added part about the approaches to aortic root surgery **on Page 6, line 117-121 and Page 8, line 122** of the revised manuscript is following as "The valve sparing is indicated by either a normal aortic valve or mild insufficiency due to geometric changes caused by an aortic root aneurysm. The non-valve sparing indications were: (I) the aortic valve was unhealthy, majorly fibrotic or calcified; (II) an aortic aneurysm exceeding 60 mm in maximum diameter; (III) a bicuspid aortic valve and severe aortic regurgitation".

Comment 7: What factors other than surgeon's preference decided whether patient will have everted prosthesis or conventional one?

Reply: We thank the reviewers for this comment. Accordingly, we have added more information about the decision to proceed with the modified or conventional prosthesis eversion technique **on Page 5, line 94-98** of the revised manuscript.

The added part about the decision to proceed with the modified or conventional prosthesis eversion technique **on Page 5, line 94-98** of the revised manuscript is following as "The decision to proceed with the modified or conventional prosthesis eversion technique was discretionary based on the underlying clinical condition. In general, one control subject was added to the conventional cohort for every patient from the modified cohort. Matching variables included age (± 5 years), sex (exact), height (± 20 cm), weight (± 20 kg) and EuroSCORE II (± 2.5)".

Comment 8: Perioperative blood loss was 1694.5 ±525.8 in the conventional group? was it surgery+ICU blood loss or post-operative blood loss alone? if the latter why only 2 patients were re-explored for bleeding? what was your protocol for re-exploration?

Reply: We thank the reviewers for this comment. Accordingly, we have added more information about the perioperative blood loss and re-exploration for bleeding **on Page 10, line 196-203** of the revised manuscript.

The added part about the perioperative blood loss and re-exploration for bleeding **on**

Page 10, line 196-203 of the revised manuscript is following as “Perioperative blood loss was 1694.5 ± 525.8 mL in the conventional group and 952.9 ± 360.7 mL in the modified group, which was determined from the estimated intraoperative blood loss and measured postoperative suction drainage within 48 hours. The indications of re-exploration for bleeding were: (I) high-drain output (> 200 mL/h) over the first 3 hours postoperatively; (II) hemodynamic instability, such as persistent tachycardia and hypotension; (III) continuous decline in hemoglobin levels; (IV) post-operative echocardiography suggested pericardial tamponade”.

Reviewer B

Comment 1: Please rename each subfigure as A/B/C/D and so on. For example, Figure 1 has four subfigures, please rename them as Figure 1A-D.

Reply: Accordingly, we have renamed each subfigure as A/B/C/D and so on in the revised manuscript.

Comment 2: To give the readers a quick catch of the key findings of your valuable study, please kindly add a highlight box.

Reply: Accordingly, we have added a highlight box in the revised manuscript.