Author’s response to reviews

Title: CORRELATION OF STRUCTURAL DEFECTS IN THE ASCENDING AORTIC WALL TO ULTRASOUND PARAMETERS: BENEFITS FOR DECISION-MAKING PROCESS IN AORTIC VALVE SURGERY

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Reviewer #1

We appreciate valuable suggestions. The new text is highlighted with the yellow color.

The study of authors is interesting with high originality. However, a statistician must compensate it for validity, and the discussion part is should be written theoretically and simpler.

Statistical analysis was carried out to find the best way to portray correlations between numerous parameters. All statistical tests were valid. We made the suggested changes to the discussion part.

Reviewer #2

We would like to thank you for the important remarks. The new text is highlighted with the yellow color.
The manuscript is well written. However minor language corrections should be obtained. For example it is "aortic wall" and not "aorta wall".

We made this correction in the manuscript title and in the manuscript text.

In the background section the authors should discuss why the study was performed and what impact the results could have. They should describe what the guidelines actually say (as they did in the discussion section). When reading the background section the reader should understand: what is the current state in guidelines, why was the study performed and how should the reader benefit from this study.

We rearranged the background section according to the valuable suggestions. We think that reader will have clear information about what message authors give with this paper.

Table 1 is called "baseline characteristics". However the table presents the histopathological grades as well. The grades are no baseline characteristic but belong to the results of the study. These should be presented in a separate table.

We created 2 tables according to the advice.

The authors should discuss in their discussion section, why there is a correlation between grades and diameter of STJ and ascending aorta only? Why does the ventriculo-aortic junction and sinus Valsalva not extend according to the grades?

We statistically found threshold values for different grades for AscA, STJ and STJI parameters.

Overall after reading of this well written manuscript, I do not exactly understand the benefit of this study. In current guidelines, indication for ascending aortic replacement is guided by the diameters of the ascending aorta and this study tells us that increased diameters are associated with higher grades of aortic wall changes. That aortic wall changes increase with increased aortic
diameter is not surprising or unexpected. Therefore, is there any conclusion the authors can draw according to guidelines? Should the indications for operation be expanded? Should the patients be operated earlier and with a smaller diameter because of changes grade 3? To answer this question, further studies should be undertaken to evaluate if grade 3 is associated with a faster dilatation after AVR than grade 2 and 1. However, the authors should discuss in more detail, what the reader can learn by reading this study.

This study is unique because it analyses histological changes in the ascending aortic wall exclusively in patients with TAV stenosis. Not bicuspid, not Marfans. The evolution of the changes is expected, but, this is not found in the literature, especially presented in exact, meticulous, manner. The logical advice would be to recommend ex tempore patohistological analysis of the wall to identify Grade 3 changes, but this is not possible because of the time constrains (extracorporeal circulation). Because of that we proposed surrogate markers, echo values that represent Grade 3 changes. In the study limitation paragraph, we stated that our future investigation will address echo follow up. We added in the conclusion section our recommendation about different cutoff values for the operation of the ascending aorta.