**Author’s response to reviews**

**Title:** Long-term outcomes and predictors of recurrent aortic regurgitation after aortic valve-sparing and reconstructive cusp surgery: a single centre experience

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Long-term outcomes and predictors of recurrent aortic regurgitation after aortic valve-sparing and reconstructive cusp surgery: a single centre experience Dainius Karciauskas, MD; Vaida Mizariene, MD, PhD, Assoc. Prof; Povilas Jakuska, MD, PhD, Prof; Egle Ereminiene, MD, PhD, Prof; Jolanta Justina Vaskelyte, MD, PhD, Prof.; Irena Nedzelskiene; Sarunas Kinduris, MD, PhD, Prof; Rimantas Benetis, MD, PhD, Prof

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RESPONSE TO DECISION LETTER

We are grateful to the editors and reviewers for their time and constructive comments on our manuscript.

We have implemented their comments and suggestions and wish to submit a revised version of the manuscript for further consideration in the journal.

Changes in the initial version of the manuscript are highlighted for added sentences.
Below, we also provide highlighted responses explaining how we have addressed each of the reviewers’ comments.

We look forward to the outcome of your assessment

Best regards,
Dainius Karciauskas

Reviewer reports:

Reviewer #1: The authors reported their single centre experience and outcomes of patients after aortic valve sparing surgery and aortic cusp repair. First, I would like to congratulate for their results which are comparable with these of the literature. These operations are challenging because they require high knowledge of geometry and physiology of the aortic root and valve. This is a retrospective study. Their text is generally well written. The topic and methods are well discussed. Generally, my opinion about this paper is positive. I believe that this paper would be interesting for the readers. Although this is not the case here, it would be even more interesting if the authors could report the results after comparison of the patients who had their aortic valve repaired with these who had it replaced using propensity score matching.

In fact, direct comparative studies between Aortic valve sparing surgery and conventional replacement therapy in the context of aortic root disease are lacking.

Thank you, Reviewer: 1, for your very kind comments.

Reviewer #2: The authors are to be congratulated on their excellent outcomes after AVS in combination with ACR. I have the following comments.

- Since the authors had clearly described exclusion criteria for AVS in combination with ACR, there clearly was selection bias in the retrospective outcome analysis. Particularly, the patients who required addition of a pericardial patch were excluded (page 8), and this should be described in the method section, and not in the results section.

Thank You for Your comment, corrected (Materials and Methods, study population section, page 6)

- Mean follow-up was 5.3 +/- 3.3 years. According to the figures, only 14 patients out of 81 total were at risk at 100 months, and only 11 out of 81 total were at risk at 10 years. This indicates that this study is "intermediate-term" outcomes and not a "long-term" outcomes. I would like to suggest the authors to modify the title of this study to reflect this.

Thank You for suggestion - still we present data from almost half of the cohort that have passed the 5 year follow up period and 13% (11 pts) that were followed for more than 12 years.
In terms of our experience with stable low number of adverse events we present our results as long term postoperative outcomes. However, we do agree that conclusions need further validation.

- Page 10: "Neither bleeding nor thromboembolic or permanent neurologic events were reported during follow-up." However, one patient died after 122 months with "sudden unexplained death", and can the authors scientifically say no one had bleeding, thromboembolic or permanent neurologic event, because sudden unexplained death can occur associated with those conditions?

The patient that we lost was 89 years old and died suddenly at home - we suspected sudden arrhythmic death, still the anatomical investigation was not performed. We corrected the sentence (Late follow up section, page 10) – „Neither major bleeding events or trombembolic complications were found during follow up“.

Thank you, Reviewer: 2, for your very kind comments.

Reviewer #3: congratulations for your excellent presentation

Thank you, Reviewer: 3, for your very kind comments