Author’s response to reviews

Title: Clinical outcome and hemodynamic behavior of the Labcor Dokimos Plus aortic valve

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Author’s response to reviews:

Dear Reviewers,

Thank you very much for your precious time and your very helpful comments. I am very grateful for your commentaries, which will improve the manuscript extremely. Furthermore, I hope to answer all your questions in the following. To simplify the revision I copied your comments and answered beneath.

Reviewer 1:

1. The Title: I suggest you to slightly modify it in the following way: ‘Clinical experience with and hemodynamic behaviour of the …’ or ‘Clinical outcome and hemodynamic behaviour of the…’.

I modified the title to the second suggestion.

2. Your conclusion regarding ‘impaired function’ of the 27 mm valve size seems too hurried and hasty and pessimistic. It is based only on the otherwise acceptable mean pressure gradient and is not supported by EOA and iEOA values.

I agree that the term “impaired function” is exaggerated. Therefore I modified the manuscript in various sections.
3. Abstract, Methods: ‘hemodynamic performance … was evaluated’ seems more appropriate, as well as ‘follow-up was 93% complete’. From your description of the unique case of endocarditis, it is a so-called early endocarditis, so that ‘One case of early endocarditis occurred’ is mandatory.

I corrected these misspellings and added “early”.


I corrected this misspelling.

5. A front view and a lateral view photogram of the prosthesis might be useful (page 4, Prosthesis).

I fully agree that a picture is useful and inserted it into the manuscript.


I modified the manuscript to ‘Operative technique’.

7. Page 4, line 15: Please, specify in °C mild hypothermia conditions in your study.

I added 32-34°C.

8. Page 4, line 17: ‘transversely opened’ – Was this a complete circular aortotomy?

To clarify this, I added for “half of its circumference”.

9. Page 4, line 24: ‘possible coronary obstruction’ – Did you mean ‘possible coronary obstruction by the bioprosthesis’?

Yes, I meant by the bioprosthesis and added this to the manuscript.
10. Page 4, line 24: ‘with aortic annuli above 29 mm’ – Did you exclude in those patients annuloaortic ectasia and aortic root dilation? If yes, how have you done it?

Patients with annuloaortic ectasia and aortic root dilation received a root replacement or, if possible, a valve-reconstruction. All our patients receive echocardiography preoperatively and CT, if necessary, to identify with annuloaortic ectasia and aortic root dilation.

11. Page 5, line 4: You might specify better as follows: ‘early postoperative (until discharge) data’.

Done.

12. Page 5, lines 22-23: Your data fit better the Methods section, Patients subheading.

I moved the data to the methods section.

13. You are reporting data on a relatively young population, with mean age 65.9 years. Comment on that in the Discussion section.

Comment at issue 23.

14. Page 6 (line 2, line 6, line 14, 15, etc.) and further: Please, add percentage in parentheses throughout the manuscript where absolute counts are enumerated.

Due to the overall number of 100 the percentage equals the n. Therefore, adding percentage in parentheses is in my opinion unnecessary.

15. Page 6, line 15: Was temporary dialysis a new onset one in all 8 patients?

All patients who required dialysis had a previously impaired renal function without the necessity of dialysis.

16. Page 6, line 16: Apparently, you dealt with a case of early endocarditis. Please, specify it as ‘early postoperative endocarditis occurred’. What was the causative agent?
I specified the sentence. A staph. aureus could be identified.

17. Page 6, line 25: patient-prosthesis mismatch.
I corrected the misspelling.

18. You might specify with what valve size you encountered the 2 cases of severe patient-prosthesis mismatch (page 6, lines 23-25).
I added this information.

Corrected.

20. Page 7, lines 23-24: No need to repeat twice the data from the Results section (stroke and sternal wound infection).
Deleted.

Eight patients are 8%. Therefor I think a change is not necessary.

22. The design features of the new LDP prosthesis are repeated in the Introduction, Methods, and Discussion sections. Please, revise and correct duly.
I revised this section in the introduction and in the discussion to avoid repetition.

23. Please, comment on predominant male population and on a relatively high prevalence of pure regurgitation as surgical indication in your study.
Various factors led to predominant male population, relatively high prevalence of pure regurgitation and the low mean age of the study population. The institutional guideline to
implant stentless valves in smaller annuli eliminated a lot of female patients with small annuli. These would also mostly have been older, by which the mean age of our study cohort sunk. Additionally, the increasing use of TAVI eliminated various older patients with aortic stenosis, by which again mean age of our cohort sunk and pure insufficiency was left for surgery. I inserted a statement of this in the discussion section.

24. Page 8, line 1 and 2: Please use EuroSCORE II (instead of EuroScore 2), predictors (instead of markers).

Done.

25. Page 8, lines 3-6: Please, consider an additional Table for this comparison.

When I wrote the manuscript I actually started to design such a table. Due to the inconsistent data format in various publications (missing EOAI or EOA or pressure gradients) and the various valve sizes the table seemed very confusing and I decided to present this comparison in text, where I could highlight the differences and similarities.


I corrected the statement.

27. An important selection bias should be acknowledged in your manuscript: most of 21 mm size prostheses were eliminated from the study population.

I added an acknowledgment of this bias at page 4, line 28.

28. Another particular aspect of your study population: it is characterized by the mean BSA of 2.0 sq. m. – relatively high for the average European, but normal and typical for German inhabitants. You may requote it in the Discussion section to explain your results.

I requoted it in the discussion section.

29. List of abbreviations should be ordered alphabetically.
30. Table 1: I would place the ‘Active endocarditis’ under the ‘Aortic valve lesion’ subheading.
Done.

31. Table 2: You report two cases of aortic annular enlargement. Please, specify the surgical technique briefly in the Methods section.
Aortic annular enlargement was done using the Manouguian technique. The brief surgical technique was inserted in the methods section.

32. Table 2: Please, add relative frequencies in % along with absolute numbers. The Table 2 lacks perfusion (cardiopulmonary bypass, CPB) times.
Due to the study population of 100 the absolute number equals the relative frequency. I added (n/%). I added CPB times.

Reviewer 2:
@ pag. 4. The Author state that "In smaller annuli (≤ 21 mm), stentless valves were implanted according to institutional guidelines." However, 3 patients (Table 2) had a prosthesis #21 and in 2 (Table 2) an annular enlargement was performed. Can the Authors comment on this?
In these patients a Sorin Solo could not be implanted due to an asymmetric aortic root and/or calcifications/annular injuries. Therefore a Labcor Dokimos plus was implanted.

@ The mean body surface was 2 m². Is it the average BS in Authors experience or patients were selected because of high BS?
Patients were not selected by BSA. Considering that the patients with smaller aortic roots received other valves, it’s in my experience the average BSA in Germany.

@ pag. 5, line 27. What do the Authors mean with sinus coronarius? Perhaps the Valsalva sinuses?
Correct. This was a translation error, which I corrected.

Reviewer 3:

Good analysis and comparisons between LDP and other pericardial bioprosthesis. Results are limited, however, from the almost complete lack of clinical and echocardiographic follow-up. To evaluate a new bioprosthesis, especially when many other similar ones are available on market yet, means not only considering the immediate performances, but especially durability and long-lasting performances. Having explored the first results in "Early postoperative results of the Dokimos plus stented pericardial aortic bioprosthesis", Holinski et al., Thorac cardiovasc Surg 2015; 63-ePP55 already, a further analysis could have included at least 1 -year echo follow up.

I totally agree that the durability of bioprosthesis is of utmost importance. In this manuscript we focus on short-term results. In contrary to the referred reference, which is only an abstract with less information about fewer patients, we report now detailed about clinical and hemodynamic outcome. A mid-term follow-up is our next task for this study cohort, but is yet not available.

To better understand the impaired performance of size 27 valve it's correct to consider the intra-annular positioning, but this procedure eventually involved a bias this observations cannot solve. How would it perform in supra annular position? Are there any size 27 implanted that way? And in mismatch patients (moderate or severe), how many size 27 valves have been implanted?

I fully agree that there is eventually a bias. Twenty-four size 27valves were implanted intra-annularly and 12 supra-annularly ("Consequently, 64% of valve size 27mm was implanted intra-annularly." is stated in line 21 at Page 7). A statistical analysis of these two subgroups did not reveal any differences, which is possibly due to low number of cases. No 27 mm valve had a severe patient prosthesis mismatch. Eight 27 mm valves had a moderate PPI, whereby 5 of these patients were obese. I added these facts to the results section and discussed them.

In line n° 1, page n° 6 the term "operative mortality", commonly used for 30-day mortality, is erroneously referred to intraoperative mortality. Even if the concept is clearer few lines after, that term is misleading.

I corrected this misleading term.

Once again thank you very much.

Regards,

Torsten Christ