Reply to Jasinski M et al.: ´Indeed, there is still room for improvement in long-term durability of BAV repair'

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June 15, 2022

Title page

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Word count:

Keywords: Bicuspid aortic valve; Aortic valve repair; Aortic valve-sparing

Text

To the Editor,

we read the letter to the editor by Dr Jasinski et al. entitled 'Long-term durability of valve-sparing or repair procedures in BAV – Is there room for improvement?' with great interest.[1] We thank Dr Jasinski et al. for their valuable comments and question on our manuscript entitled 'Longer-term outcomes after bicuspid aortic valve repair in 142 patients'.[2] We agree with their statements and we will touch all their points and answer their questions in this Reply.

We re-reviewed our database and had another in-depth analysis into the data of our patients. According to Sievers classification of the bicuspid aortic valve (BAV) all BAV's were Type 1 but one was Type 2 and surprisingly, no single Type 1 was present. Due to some data issue, we were no more able to elucidate the exact angle between the two functional commissures anymore; however, giving this fact we can presume the majority of the BAV's were asymmetric or very asymmetric with the angle smaller than 180deg as described by Schafers et al.[3]

Considering the preoperative aortic annulus mean diameter was 27 +- 3.6 mm in the Group 1 (isolated BAV repair) and annuloplasty was performed in only 20 patients (21%; 10x subcommissural suture – Cabrol, 9x partial external annuloplasty using a Dacron ring, and 1x "basal" suture annuloplasty – Schafers) the need for cusp augmentation is obvious. If no proper or none annuloplasty has been performed a cusp augmentation, mostly of the fused cusp, using an autologous pericardial patch, is mandatory to achieve sufficient coaptation. The concept behind the augmentation was to achieve larger effective orifice area, which is given by the nature smaller in BAV than in tricuspid AV[4] and consequently achieve lower postoperative transvalvular gradients. As already mentioned in our original article[2] the pericardial patch augmentation in our cohort seems to have

a negative impact on BAV repair durability as 92% of patients in Group 1, who had to be reoperated on the AV or had recurrent AR[?] 2deg in the follow-up, receive this technique. Similar trend was observed in Group 2 (67%). Due to this fact, we resigned from this technique of BAV repair and do not use it anymore since 2018. In our opinion, until an "ideal" patch material will be developed this technique for BAV repair should definitely be abandoned. To delineate this problematic, recently, we reoperated on one patient, who received isolated BAV repair using autologous pericardial patch augmentation of the fused (left/right) cusp 11 years ago. The intraoperative finding was very interesting presenting extremely calcified BAV, especially the fused cusp (Video 1). It looks actually as BAV which evolves originally in AV stenosis, the more frequent pathological presentation of BAV. The valve has been replaced with biological prosthesis and patient recovered very well.

The preoperative diameter of the sino-tubular junction (STJ) of was 37.2 +- 9.1 mm in the Group of isolated BAV repair and STJ remodeling was performed in only 12 (13%; 6x ascending aortic replacement using a Dacron prosthesis, and 6x PTFE felt strip annuloplasty). This is also quite small number; however, in the case of using the pericardial patch augmentation technique, sufficient coaptation of the BAV is reached mainly through extraordinary high effective height of the cusps and therefore STJ remodeling is not necessarily mandatory.

Our approach to the isolated repair of the BAV's has been changed and is currently different than described above. Since we do not use pericardial patch augmentation of the cusps anymore, we respect and apply the principals of the current experts in this field.[5]

In conclusion, we have learned a lot over the years and were trying to refine our BAV repair technique. In our opinion, by respecting the above-mentioned principals, which are a consensus of the experts, we believe, a very reasonable surgical option for the treatment of this difficult congenital pathology can be offered to our patients. Finally, indeed there is still a large room for improvement in long-term durability of BAV repair and we should all keep on critical analyzing our techniques and data.

We thank again Dr Jasinski et al. for their valuable insights.

With kind regards,

Tomas Holubec, Mojyan Safari, Arnaud Van Linden and Anton Moritz

Acknowledgments and Disclosures

Funding statement: none declared.

Conflict of interest statement: All authors declare they have no conflict of interest.

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Figure legends

Video 1 Intraoperative video demonstrating the initially repaired bicuspid aortic valve using autologous pericardial patch augmentation of the fused cusp (Sievers type 1, left/right) before resection of the valve.

Picture-in-picture presenting intraoperative photograph of resected heavily calcified aortic valve, stressed on the fused cusp.

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`BAV redo.mov` available at https://authorea.com/users/400229/articles/573094-reply-to-jasinski-m-et-al-indeed-there-is-still-room-for-improvement-in-long-term-durability-of-bav-repair