Peer Review File
Article information: https://dx.doi.org/10.21037/jtd-23-364

Reviewer A

Thank you for the contribution to the journal. The topic at hand is indeed of interest to the medical community.

Comment 1: Before accepting the article for publication, I believe more emphasis needs to be placed in the fact that the self-expanding valves used in this study are NOT the ones most commonly adopted worldwide (Medtronic Evolut) - as this can have a significant effect on result interpretation. I would include mention of this in the Abstract section of the paper.

Reply 1: As we mentioned in the Limitation part, the most commonly used self-expandable valves (Medtronic Evolut) were not available in China until very recently because of the Chinese regulatory policies. We include mention of this in the Abstract section in the revision.

Changes in the text: (Line 42-44, Abstraction Methods) The SEVs were locally manufactured valves that have received Chinese regulatory approval (Venus-A, Taurus One, and VitaFlow), while the BEVs were Edwards Sapien XT and Sapien3.

Comment 2: I believe that comments (and conclusions) made regarding aorta size expansion need to be minimized, as CT follow-up was only available in a small number of patients.

Reply 2: We minimized the comments as well as conclusions regarding the aortic size expansion in the revision.

Changes in the text: We deleted part of the comments regarding the hypothesis of AA dilatation in the Discussion (The supra-annular design of SEVs can mitigate the effect of valve asymmetry and under-expansion, thus leading to a decreased turbulence and less sheer stress of blood flow. Although post-procedural mean gradient was not statistically significant in the present study, we hypothesize that different flow dynamics downstream of different THVs, such as turbulence and shear stress) and Conclusion (BEV had slightly higher aortic expansion rate).

Comment 3: Lastly, and perhaps most importantly, the number of patients having self-expanding valves was drastically higher than that of patients having balloon-expandable valves. This seriously affect the external validity of the results, and also needs to be clearly and overtly mentioned in the abstract of the paper, discussion, limitations, and perhaps conclusions.

Reply 3: Yes. Due to the Chinese regulatory policies, balloon-expandable valves (Edward Sapien) were not approved in China until recently. In early clinical practice, locally manufactured self-expandable valves were the only available THVs. We previously mentioned it in the limitation part. This time, we re-mentioned it in the revision.

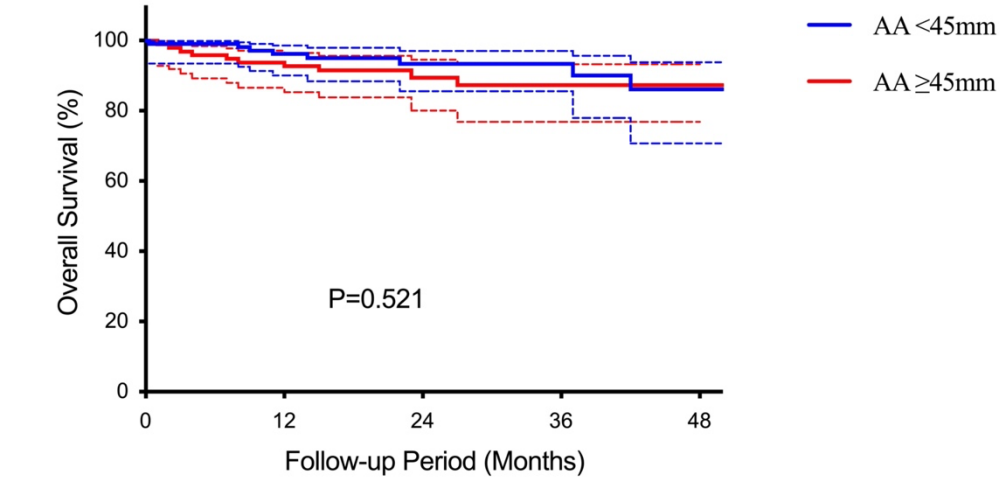
Changes in the text: (Line 37-39) The present study compared the performance of widely used Edwards BEVs and domestic SEVs in patients with dilatated AA among Chinese population.
(Line 42-44, Abstract) The SEVs were locally manufactured valves that have received Chinese regulatory approval (Venus-A, Taurus One, and VitaFlow), while the BEVs were Edwards Sapien XT and Sapien3.
(Line 46-47, Abstract) The sample size of SEV group was larger than that of BEV group because BEVs were not available in China in the early clinical practice.
(Line 269-272) The BEVs (Edward Sapien XT and Sapien 3) were also not available in the early clinical practice, therefore the sample size of SEV group was drastically larger than that of BEV group. This might affect the external validity of the results. Further studies with larger sample size are required.

Reviewer B

Comment 1: Methods. Definition of AAA> 40 mm is of interest, although it includes a wide range of diameters. Maybe subgroup analysis for median values (more or less than 45) may be of help and informative.Similarly, subgroup analysis for patients with and without AR may be of help and for bicuspid aortic valve.

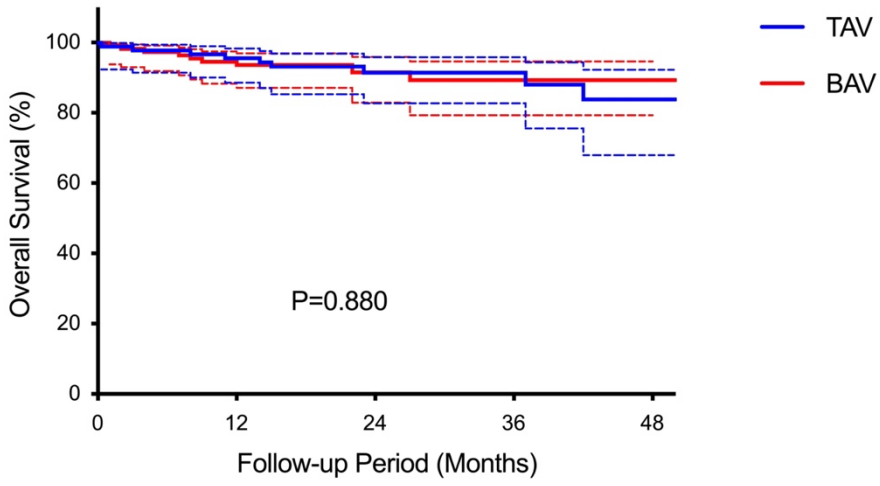
Reply 1: In the revision, we added the subgroup analyses for these variables.

Changes in the text: (Line 189-193) In subgroup analyses, we classified patients according to the type of aortic valve (BAV vs. tricuspid aortic valve [TAV]), degree of preoperative aortic regurgitation (AR) (≥moderate AR vs. <moderate AR), and whether preoperative AA diameter ≥45mm or not (AA≥45mm vs. AA<45mm). No statistical differences were found regarding the overall survival (Supplementary Figure 1-3).
(Line 426-431) Supplementary Figure 1. Kaplan-Meier curves for overall survival in patients with AA ≥45mm and AA <45mm (p=0.521). (AA=ascending aorta)
Supplementary Figure 2. Kaplan-Meier curves for overall survival in patients with BAV and TAV (p=0.880). (BAV=bicuspid aortic valve; TAV=tricuspid aortic valve.)
Supplementary Figure 3. Kaplan-Meier curves for overall survival in patients with ≥moderate AR and <moderate AR (p=0.231). (AR=aortic regurgitation)



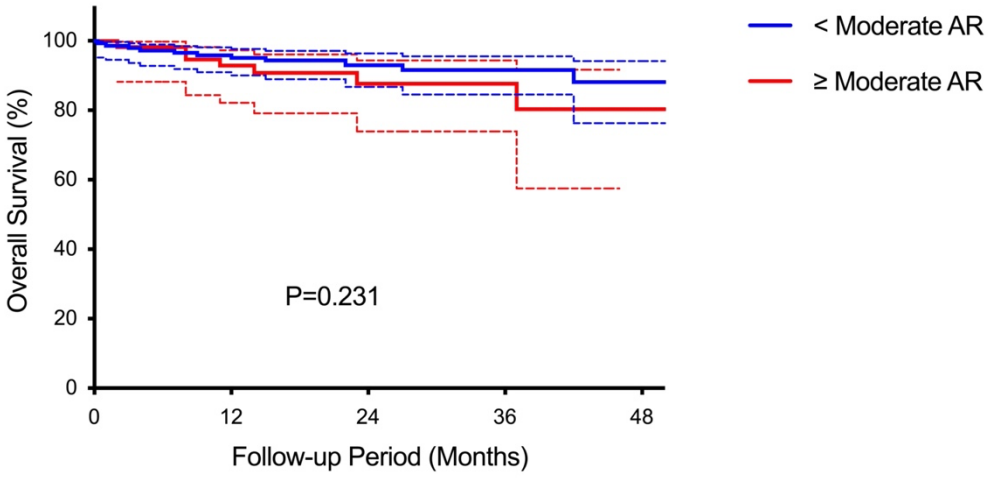
No. at risk

AA <45mm	106	100	55	32	16
AA ≥45mm	96	90	43	14	4



No. at risk

BAV	112	104	43	16	6
TAV	90	86	54	30	14



No. at risk

< Moderate AR	144	138	69	33	14
≥ Moderate AR	58	52	38	13	6

Comment 2: Methods. It should be better detailed how authors choose variables to insert in multivariate analysis.

Reply 2: We added these content in the revision.

Changes in the text: (Line 149-152) Patients were divided into two groups (device success and device failure). Baseline variables that were found to be different in univariable analyses with a P value of <0.1 were identified and included in the multivariable analyses.

Comment 3: Recently BEV vs. SEV have been indirectly compared. Please quote on PMID: 33974961 on how these may affect results.

Reply 3: We added these content in the revision.

Changes in the text: (Line 216-219) Previous studies regarding the comparison of SEVs and BEVs found no differences on all-cause and cardiovascular mortality, although BEVs were associated with a reduced risk of permanent pacemaker implantation and paravalvular leak. However, the impact of AA dilatation on device success following TAVR has not been systemically described before.

Reviewer C

An and colleagues present a retrospective series of 207 patients with ascending aorta dilatation undergoing transcatheter aortic valve implantation (TAVI) with self-expandable and balloon-expandable valves. The aim of the study was to analyze the impact of transcatheter heart valve on post-procedural changes of ascending aorta diameters and to assess the procedural device success. The article focuses particularly on relatively news self-expandable devices (Venus-A, Taurus One and VitaFlow). Such study design has been already published in the literature (See: He et al. Ascending aortic dilatation rate after transcatheter aortic valve replacement in patients with bicuspid and tricuspid aortic stenosis: A multidetector computed tomography follow-up study. World J Emerg Med 2019;10(4):197-204), showing the same results regarding the influence of bicuspid valve on further ascending aorta dilatation. The article is overall well-written, even if some English spelling corrections is sometimes necessary. Herewith enclosed my main comments.

Comment 1- Page 1, line 33, Abstract section. I would precise that the study is implemented in a Chinese population, as the whole results are hardly comparable with European population. Also, the authors rightly mention it by using the reference 11 about the TAVI procedure in Asia Pacific with respect with others regions.

Reply 1: We emphasized this point in the Abstract in the revision.

Changes in the text: (Line 37-39) The present study compared the performance of widely used Edwards BEVs and domestic SEVs in patients with dilatated AA among Chinese population.

Comment 2:- Page 2, lines 41-42, Results section. I assume there is a spelling error: “The overall device success was slightly lower in SEV group compared with SEV group (84.2% vs. 95.8%, P=0.213)”, as SEV group is two times mentioned? Please correct.

Reply 2: Sorry for the spelling error. We corrected it in the revision.

Changes in the text: (Line 46-47) The overall device success was slightly lower in SEV group compared with BEV group (84.2% vs. 95.8%, P=0.213)

Comment 3:- Page 2, line, 49, Results section. Please write “0 (-0.4-0.8)mm/y” with “Years” entirely written, as it is the first time that you use this abbreviation.

Reply 3: We corrected it in the revision.

Changes in the text: (Line 56) with an aortic expansion rate of 0 (-0.4-0.8)mm/year (P=0.102)

Comment 4:- Page 3, line 98. Why did the authors limit the study to transfemoral procedure?

Reply 4: We focused on the transfemoral route because stiff wire interaction in the AA and intimal disruption created by transcatheter heart valve injury to the aortic wall might be a concern among patients with dilatated AA. Excluding other accesses might help minimizing the bias. In the present study, no patient experienced intra-operative AA injuries.

Changes in the text: None.

Comment 5: Page 3, lines 105-106. Please provide the ethical committee number and also provide a reference to the STROBE guidelines, as the authors have rightly written the manuscript according to these guidelines.

Reply 5: We added these information in the revision

Changes in the text: (Line 113-115) The study was approved by the institutional review board of Fuwai Hospital (approval number: 2022-1829), and informed consent was obtained from all patients.

Comment 6: Page 3, lines 110-111. Did the authors calculate the diameter of the ascending aorta by applying the following formula: (maximal diameter + minimal diameter)/2?

Reply 6: Yes.

Changes in the text: (Line 120-121) The diameter of the ascending aorta was calculated as: (maximal diameter + minimal diameter)/2.

Comment 7: Page 3, lines 119-122. All the SEV mentioned in the manuscript are relatively new devices with no longer follow-up data available and which are commonly word-wide underused. For instance, the LAUNCH study about the post-market results of the VitaFlow valve is still ongoing. Please forgive the potential lay-person question but, is there any other SEV available in China or did the authors analyze only such kind of valve intentionally?

Reply 7: This is a good question. Actually, in the early clinical practice, only domestic THVs were available in China, including Venus-A, Vitaflow, and TaurusOne. Edwards Sapien valves were available very late in China, which is the reason why the sample size of BEV group is small compared with that of SEV group. The Medtronic CoreValve/Evolute valves were available even later than Edwards valves.
Another domestic valve is the J-valve (Suzhou, China), which are widely used in China in patients with pure AR. But J-valve can only be implanted through transapical access, therefore excluded in the present study.

Changes in the text: None.

Comment 8: Page 7, References section. Please add “s” to “reference”.

Reply 8: We corrected it in the revision.

Changes in the text: (Line 316) References

Comment 9: Page 11, Figure 1. This figure is not referenced in the text. Please add one reference to the figure in the text.

Reply 9: We added it in the revision.

Changes in the text: (Line 166-167) A total of 207 patients with AA dilatation (≥40mm) who underwent transfemoral TAVR were identified (Figure 1)

Comment 10: Page 13, Table 1. Table 1 shows that 25,7% and 45,8% of the patients in the SEV and in the BEV group having moderate-to-severe aortic regurgitation. However, dominant

aortic regurgitation is listed as an exclusion criteria of the study. Can the authors comment on this?

Reply 10: Most of these cases were moderate AR (with only a few more than moderate AR). Severe AS is the indication for TAVR in all patients in the present study. Pure AR was excluded in the present study.

Changes in the text: None.

Comment 11: Maybe should the authors add a paragraph in the discussion about the benefit to follow (or not?) the further aortic dilatation after TAVI. Indeed, TAVI is generally indicated in case of contra-indication to open surgery. So, if a further aortic ascending dilatation is diagnosed, what would you advise to manage it? These findings seem more helpful when considering TAVI in low-risk patients, in pre-operative settings.

Reply 11: Yes, this is a very good point. We added these content in the revision to emphasize the importance of AA evaluation in patients undergoing TAVR.

Changes in the text: (Line 257-263) In these patients, other strategies and accesses, such as concomitant TAVR and wrapping of AA through mini-sternotomy, might be considered. Postoperative follow-ups are important to evaluate the AA progression. If rapid AA expansion (3-5mm/y) is noted, further intervention (surgical or endovascular treatment) might be needed. As the indications for TAVR have expanded to low-risk and young patients, AA dilatation should be considered as a criterion to refine risk stratification.