

Peer Review File

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Reviewer A

I am really thankful that the authors submitted this very interesting paper about the impact of high volume centers especially in this topic to deal with complications TAVR. I feel this paper is very important to be shared in order to argue that TAVR should be performed in experienced and high volume centers.

>We thank the reviewer for taking the time to review our manuscript and providing insightful comments. The impact of high-volume centers, particularly in addressing complications associated with TAVR, is indeed a critical topic.

Reviewer B

1) why use SAVR volumes to examine TAVR outcomes? Why not just use TAVR volumes? A better rationale is needed. TAVR and SAVR can be managed by different teams (TAVR-cardiologist/CT surgeons, SAVR-CT surgeons). The volume is SAVR may not be implicated in TAVR in this sense.

2) The outcomes need to adjust for covariates, such as patients' demographics, comorbidities, and other hospital characteristics such as teaching status, bed size, and locations. These factors can influence patient outcomes as well.

>1) The reviewer's comments are well taken. The reason for choosing SAVR volumes is two-fold. It gives a treatment option to patients with aortic stenosis and provides a strong multidisciplinary team. Moreover, it can help us address the potential complications that may require surgical intervention. Cardiac tamponade is one of these complications that requires surgical expertise. Thus, we organized our cohort based on SAVR volumes to assess the sufficiency of surgical support provided. We have amended the manuscript by adding the following in the first paragraph of the manuscript:

“We opted for surgical aortic valve replacement (SAVR) volumes for two main reasons. Firstly, it provides a viable treatment avenue for patients diagnosed with aortic stenosis, supported by a robust multidisciplinary team. Secondly, it allows us to effectively manage potential complications necessitating surgical intervention. Cardiac tamponade is one such complication that may require surgical expertise.”

>2) We appreciate the reviewer's comment. Our multivariable model was initially adjusted for patients' demographics and comorbidities, but we have now added hospital characteristics such as teaching status, size, and locations in our multivariable model and redid the analysis. All these factors indeed influence the patients' outcomes. We have now added the list of adjusting factors in the third paragraph of our manuscript as follows:

“Our multivariable regression model was adjusted for age, race, sex, hospital location, hospital region, hospital teaching status, hypertension, hyperlipidemia, diabetes (with and without chronic complications), chronic pulmonary disease, smoking, obesity, peripheral vascular diseases, chronic heart failure, history of stroke, atrial fibrillation, coronary artery disease, alcohol abuse, solid tumor without metastasis, and elective status of the procedure.”

Reviewer C

This is a clear and concise report about one of the potentially lethal complications after TAVI and the effect of the volume on mortality. The figure is very helpful herein.

Can the authors comment on why no inverse relationship is observed between the volume and the incidence of tamponade? For the outcome, this inverse relationship is clearly visible.

In high volume centers, the need for transfusion is low while the rate of acute renal injury is quite high. Can this be explained?

Is the odds ratio found for high age per year or per age class?

A short comment about potential pitfalls in diagnosis and treatment would add to the value of the manuscript.

>We thank the reviewer for the valuable feedback. The potential reason for the lack of an inverse relationship between volume and incidence of tamponade or post-operative complications like AKI could be that the high-volume centers may attract more complex cases, increasing the risk of complications like tamponade or AKI. Patient-specific factors, such as higher comorbidities or anatomical variations, may influence the likelihood of developing tamponade or AKI and could override any potential volume-outcome relationship. Additionally, variability in surgical techniques and postoperative management across different centers may impact the occurrence of complications. Moreover, high-volume centers typically have experienced surgical teams with advanced skills, leading to more precise surgical techniques and reduced intraoperative bleeding, thereby lowering the need for transfusion. These centers are more likely to have access to advanced technologies, such as intraoperative monitoring devices and point-of-care testing, which facilitate early detection and management of bleeding and enable targeted transfusion when necessary.

We have added the following in the fourth paragraph of the manuscript:

“The higher incidence of AKI and tamponade in higher-volume centers may be attributed to their propensity to attract more complex cases, thereby increasing the likelihood of complications. Patient-specific factors, such as higher comorbidities or anatomical variations, may influence the likelihood of developing complications and could override any potential volume-outcome relationship. Additionally, variability in surgical techniques and postoperative management across different centers may impact the occurrence of complications.”

>Thank you for the comment. The odds ratio is for age per year.

>Thank you for the comment. We have now added a short comment about the potential pitfalls in the diagnosis and treatment of cardiac tamponade after TAVR in the last paragraph of the

manuscript as follows:

“Diagnosing and managing cardiac tamponade after TAVR demands heightened clinical awareness and a comprehensive approach to avoid potential pitfalls. Given the diversity of symptoms and the possibility of overlapping clinical presentations with other post-TAVR complications, clinicians must maintain a high index of suspicion. Timely recognition is paramount, as diagnostic delays can lead to rapid hemodynamic deterioration. Furthermore, the interpretation of diagnostic imaging, particularly echocardiography, can be challenging due to artifacts and anatomical complexities post-TAVR, necessitating meticulous evaluation by experienced operators. Treatment decisions, including pericardiocentesis or surgical intervention, should be guided by individual patient factors, hemodynamic stability, and procedural considerations. Collaborative teamwork among interventionalists, imaging specialists, and intensivists is imperative to navigate these complexities effectively and ensure optimal patient outcomes in the management of post-TAVR cardiac tamponade.”

Additionally, per the Healthcare Cost and Utilization Project (HCUP) guidelines, cases <11 cannot be reported. Therefore, we have updated the figure accordingly for need of transfusion where we have now mentioned <11/100 cases.