

Editorial



Adjunctive Imaging for Optimal Transcatheter Aortic Valve Implantation

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Conflict of Interest

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► See the article “Comparison of Intracardiac Echocardiography Versus Transesophageal Echocardiography for Guidance During Transcatheter Aortic Valve Replacement” in volume 54 on page 63.

Aortic stenosis (AS) is the most common valvular heart lesion with the highest clinical impact and mortality.¹ More than 2 decades has passed since the first transcatheter aortic valve implantation (TAVI) which was performed in 2002, and during this period TAVI has become a well-established therapeutic option in patients with severe AS. As a result of rapid improvement in TAVI and the favorable results of many clinical studies, TAVI is currently the preferred option for symptomatic severe AS, especially in elderly patients.² Along with the evolution of TAVI, the patient population is expanding explosively, bringing TAVI to more young and low-risk patients.³ This has brought TAVI into paradigm of ‘lifetime management’ for AS patients, and physicians concern more on minor complications that may have impact in the long run.⁴ This includes issues such as mild paravalvular regurgitation, hypoattenuated leaflet thickening, atrioventricular block with need for permanent pacemaker implantation or future coronary access, which each all may have a substantial cumulative undesirable impact.⁵

As to decrease numerous minor complications, and to simplify the procedure without compromising the quality, physicians endeavor to optimize the procedure by applying adjunctive modalities. This includes imaging guided TAVI, which help clinicians derive multimodality imaging information and integrate it into the decision-making process for patient care during the procedure.⁶ The standard imaging modality was transesophageal echocardiography (TEE), because this allows precise identification of the aortic valve complex, however general anesthesia (GA) is essential for TEE in most cases. Meanwhile, in-line with the current trend of minimalistic treatment, the use of intracardiac echocardiography (ICE) is nascent, which has been shown to be a solid method in imaging.⁷ Despite the accumulated experience of ICE-guidance and strong advantage of not requiring GA, hurdles still exist in using ICE as a routine imaging modality in TAVI.

In this study, the authors compared the efficacy and safety of ICE-guidance vs. TEE-guidance during TAVI.⁸ Due to the potential of selection bias, a propensity score matched analysis was performed. Moreover, because the imaging modality is highly associated with the anesthesia method (monitored anesthesia care [MAC] vs. GA), the imaging modality was linked to the anesthesia method. The final analysis groups were the ICE-MAC group and

Data Sharing Statement

The data required to reproduce these findings cannot be shared as this is an editorial.

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the TEE-GA group. A total of 120 patients were matched for each groups, and the primary outcome, defined as all-cause mortality, rehospitalization for cardiovascular cause, or stroke at 1-year, was similar between the 2 groups. More than moderate paravalvular regurgitation, new permanent pacemaker implantation, and bleeding were also similar between the 2 groups. Due to the non-randomized nature and small sized cohort of this study, we should be cautious in coming up with a confirmative conclusion. As can be seen in the baseline characteristics before the matching process, the two cohorts were distinct; the TEE-GA group seemed to include more ill patients, which is easy to understand. Moreover, the similar rates of significant paravalvular regurgitation in despite less frequent postdilation in the ICE-MAC group can also be partially explained by the lower-risk in this group. But still, from the study results, we can appreciate that ICE may be an alternative imaging modality for TAVI, without compromising the quality of the procedure.

Along with the results, we should keep in mind that the imaging modality remains an adjunctive tool to optimize and standardize the procedure. What is more important than the imaging modality is to link the imaging results with decision making and to understand which measurements are predictors of clinical outcomes. Moreover, a single imaging modality should not be insisted on as a gold standard. Each imaging modality, even transthoracic echocardiography has strong points and drawbacks, while the best modality should be selected for the patient. Finally, the authors deserve credit for this study, as providing evidence for the role of ICE in patients who receive TAVI.

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