To be followed ... A comparison of minimally invasive and standard aortic valve replacement

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Central Message

This study of the RT approach brings support to the benefits of this technique over standard AVR but provides useful technical tips and raises unanswered questions ripe for a properly designed randomized controlled trial.

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The retrospective article by Stolinski and colleagues¹ compares the perioperative outcomes between a right anterior thoracotomy approach and a standard sternotomy for aortic valve replacement (AVR) in a low-risk population using propensity score matching, a statistical technique that alleviates or reduces at best but does not eliminate differences in preoperative characteristics.

This article¹ describes in thorough detail the surgical technique of the right anterior minithoracotomy in a single center. The learning curve is well documented and may benefit cardiac surgeons interested in this approach.

Overall, 422 patients were included in this propensity-matched study,¹ and there were no significant differences for patient characteristics after matching. The results show less postoperative bleeding by 200 mL, which may be clinically significant. Blood transfusions were less in the right thoracotomy (RT)-AVR group, but approximately 50% of them received red blood cells despite a preoperative hemoglobin level of 13 g/dL. There was a significant decrease in new-onset atrial fibrillation in the RT group, which contributed to the decreased intensive care unit and hospital length of stay.

Despite including a group of low-risk patients with normal ventricular function, there was 1 death due to stroke and 1 death due to cardiogenic shock in each group using normothermic blood cardioplegia. One death in the RT group was due to occlusion of the left anterior descending artery, which could be related to suboptimal visualization during valve implantation. The conversion rate was 3.2% due to aortotomy suture line bleeding in 3 patients, left-sided aorta in 1 patient, and dense pleural adhesions in 2 patients, which make the RT approach impractical in all patients. The consequences of right internal thoracic

ligation are unknown, as is the impact of lung herniation and groin complications. No cost analysis, postoperative echocardiographic discharge data, or long-term outcomes are available, which limits the reach of this work. The data presented in the article do not support the assertion that the RT-AVR is the approach of choice for surgical treatment of severe aortic stenosis but sets up the still burning question that can be answered only by a large well-designed multicenter randomized trial stratified by age, gender, ventricular function, valve lesion, size of aortic annulus, presence of coronary artery disease, and all the major factors known to affect clinical outcomes. The burden is on the surgeons who believe that the RT-AVR is better. We should get together and get to work on producing scientifically valid and useful data. Who will rise up? In this rapidly changing era of expanding transcatheter aortic valve replacement indications and rapid-deployment valves, answering this question becomes paramount. Indeed, to be followed....

Reference

1. Stolinski J, Plicner D, Grudzien G, Wasowicz M, Musial R, Andres J, et al. A comparison of minimally invasive and standard aortic valve replacement. *J Thorac Cardiovasc Surg*. 2016;152:1030-9.