BENEFITS OF SUTURELESS AORTIC VALVES MAY NOT BE LIMITED TO REDUCED CROSSCLAMP TIME

To the Editor:

I read the recent letter by Tavlasoglu and colleagues¹ with great interest. The benefits of minimally invasive surgery for conventional aortic valve replacement performed through a partial upper sternotomy or right minithoracotomy have been reported to include not only reduced ventilation time, decreased incisional pain, reduced wound infections, reduced blood loss and transfusions, and decreased time to discharge but also significantly reduced mortality.² Sutureless bioprostheses simplify aortic valve replacement, allowing more surgeons to perform minimally invasive aortic valve replacement with all its previously stated advantages. This innovation will also reduce crossclamp and cardiopulmonary bypass times, which may decrease morbidity and mortality. Salis and co-workers³ found that reducing bypass time by 30 minutes significantly decreased blood transfusions, neurologic complications, and infections, as well as reducing renal and multi-organ failure. These benefits are due to minimizing the time-dependent inflammatory response and also to reducing the number of gaseous or particulate microemboli. Maleszka and associates⁴ demonstrated that cardiopulmonary bypass time was an independent predictor for early

mortality in elderly patients undergoing complex procedures.

Minh and colleagues⁵ investigated the use of sutureless bioprostheses in elderly patients to reduce mortality and morbidity associated with complex procedures. Sutureless bioprostheses reduce the crossclamp and cardiopulmonary bypass times, which is important not only because of the concern for myocardial protection during cardiac arrest, which is mandatory, but to reduce overall morbidity and mortality.

Transcatheter valve implantation permits the treatment of high-risk patients with aortic valve stenosis and degenerative aortic or mitral bioprostheses as well as patients who are not candidates for operation. For high-risk elderly patients who have multiple-valve disease and who are not currently considered candidates for transcatheter valve implantation, alternative procedures need to be evaluated to improve their quality of life with low operative morbidity and mortality.

Not only did the patient cohort of Minh and colleagues⁵ contain patients undergoing double-valve surgery, but also 60% of their patients underwent additional cardiac procedures. For these patients, the use of the sutureless valve resulted in a reduction in cardiopulmonary bypass time, which positively influenced their outcomes. To date, several thousand sutureless bioprostheses have been successfully implanted, with a maximum follow-up of 7 years. The comment by Tavlasoglu and colleagues¹ that long-term data are needed is justified; however, available studies, including randomized trials, are promising and show excellent midterm results.

In their letter, Tavlasoglu and colleagues¹ also suggested that a force of 3 to 4 atmospheres on the stent and surrounding tissue could be the reason that 2 patients in the cohort of Minh and colleagues⁵ required the implantation of a permanent pacemaker. In the patient cohort of Minh and colleagues,⁵ which included patients

undergoing septal myectomy, triple-valve surgery, and the maze procedure, Tavlasoglu and colleagues¹ did not clearly identify which patients needed pacemakers. For transcatheter valve implantation, the forces at the native annulus are doubled or tripled during valvuloplasty or valve deployment, and not all of the annuli are heavily calcified. Many such patients also require a pacemaker insertion.

I believe that the message from Minh and colleagues' study⁵ in their original article is that sutureless bioprostheses should not only be considered in minimally invasive aortic valve replacement but also for patients undergoing complex surgical procedures, where their use could positively influence operative morbidity and mortality. Future studies are needed to identify patient cohorts who will benefit most from sutureless valves and determine which patients should undergo conventional aortic valve replacement.

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