Mitral valve repair versus replacement for infective endocarditis. What is better in the “real world”?

Manuel J. Antunes, MD, PhD, DSc

From the Center of Cardiothoracic Surgery, University Hospital and Faculty of Medicine, Coimbra, Portugal.

Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication April 28, 2018; revisions received April 28, 2018; accepted for publication May 1, 2018; available ahead of print June 27, 2018.

Address for reprints: Manuel J. Antunes, MD, PhD, DSc, Center of Cardiothoracic Surgery, Centro Hospitalar Universitário de Coimbra, Praceta Prof Mota Pinto, Coimbra 3000-075, Portugal (E-mail: antunes.cct.chuc@sapo.pt).

J Thorac Cardiovasc Surg 2018;156:1471-2

0022-5223/\$36.00

Copyright © 2018 by The American Association for Thoracic Surgery

<https://doi.org/10.1016/j.jtcvs.2018.05.010>

Manuel J. Antunes, MD, PhD, DSc

Central Message

Mitral valve repair is superior to replacement in patients with infective endocarditis and should be pursued, whenever feasible, by surgeons with experience in these procedures and pathology.

See Article page 1473.

The indications for surgery in native valve endocarditis are now well defined by the guidelines developed by the main societies of cardiology and cardiac surgery from both sides of the Atlantic.^{1,2} However, the choice of surgical procedure is less well defined, especially with regard to repair versus replacement. The principal concern is the effect of active infection on the feasibility and durability of repair, and this applies to all valves, especially the aortic and the mitral. But recurrence of infection is very common after implantation of a prosthesis, whether mechanical or biological, apparently with no difference between the two.

Naturally, valve conservation is especially important in less developed populations where compliance with medical therapy, especially anticoagulation, is poor, and bioprostheses are prone to early degeneration in young patients. Repair of the aortic valve is generally only applied to minor lesions, such as localized perforations of the cusps and vegetations that do not significantly alter the valve structure. In contrast, there is a wider scope for conservation of the mitral valve (MV). Several authors have confirmed the feasibility of MV repair in the healed and active phase of infective endocarditis and have shown better long-term results in comparison with valve replacement.³⁻⁵

In an article published in this issue of *The Journal of Thoracic and Cardiovascular Surgery*, Lee and colleagues, from Taiwan,⁶ report an analysis of their national database including a total of 15,111 patients who had MV surgery between January 2000 and December 2013. Of these, 1999 adult patients (13.2%) underwent first-time MV surgery because of native valve endocarditis. Patients were more likely to undergo valve replacement (78.8%) than repair (21.2%), but with a trend to an increasing repair rate during the period. Nonetheless, “in low-volume centers, the repair rate was significantly lower and the beneficial effect of repair was less apparent.” To minimize potential selection bias, the authors calculated a propensity score matching, resulting in 352 pairs for analysis. Surgical mortality and morbidity, and primary outcomes during follow-up were

analyzed. They concluded that “mitral repair for infective endocarditis has better perioperative results and lower rates of late mortality and composite end point outcomes than mitral replacement, and is recommended whenever possible, even for patients with an active infection status.”

The database subject to this study, which is of administrative, not clinical nature, appears to be very comprehensive, with a large number of variables, and representative of the population. However, clinical and surgical data are not complete, which is a limitation of the study, acknowledged by the authors. Before propensity score matching, patients in the MV repair group were younger, had lower prevalence of active infective endocarditis, a lower proportion of emergent surgery, and had a lower incidence of comorbidities, including diabetes mellitus, coronary arterial disease, and end-stage renal disease, which indicates that there was a selection process at the time of surgery, repair being, naturally, offered to lower-risk patients. These differences were annulled by the propensity score matching, although it is obvious that, in general, the more severe the valve destruction, the greater the likelihood of MV replacement, and the greater extension of the disease rather than the procedure itself could explain worse outcomes in the replacement group. Still, in my view, the 2 groups were sufficiently balanced for a fair comparison.

However, some aspects deserve comment. Having in mind the demographic characteristics of the population

(mean age, 51.8 years; 86% elective), I found the early mortality and the rate of new-onset cerebrovascular accident somewhat higher than it should be in a contemporaneous series. Also, I was astonished by the fact that 20% of patients required more than 10 U of packed red blood cells. During the article evaluation process, in response to the reviewers, the authors declared that “the relatively high rates of early mortality and massive blood transfusion represent the real-world data for Asia,” but I must confess that I had not realized that from other reports from that part of the world. Finally, the follow-up (mean 4.8 years) was not as long as the authors appear to consider it, hence some caution should be used when referring to “late” outcomes.

With regard to late untoward events, the authors reported that the risk of new stroke was also significantly lower in patients who had MV repair compared with the other 2 groups of patients. In contrast, the risk of new stroke did not differ significantly when patients who received bioprostheses were compared with those who received mechanical MV replacement, and this is an important finding.

In a report recently published in *The Journal of Thoracic and Cardiovascular Surgery* by the group of David Adams at Mount Sinai,⁷ under the title of “Real-world outcomes of surgery for native mitral valve endocarditis,” the authors showed that “in active endocarditis, mitral valve repair is associated with better survival and lower risk of recurrent infection compared with valve replacement and should be the surgery of choice when feasible.” In the Editorial Commentary accompanying this report,⁸ I questioned the use of the epitome of “real world” in that American series and wrote that “mitral valve repair performs better than replacement in infective endocarditis, but it requires experience

that might not be present in most institutions and individual surgeons of the “real world,” which is also implicitly acknowledged by Lee and colleagues.⁶

The concept of repair in these conditions is still not generally accepted and adopted. Hence, this relatively large contemporaneous series is of significant pedagogic interest. These authors are to be congratulated on reinforcing the plea for repair rather than replacement of the MV in this setting. But the question arises again: do they represent the “real world”?

References

1. Pettersson GB, Coselli JS, Hussain ST, Griffin B, Blackstone EH, Gordon SM, et al. The American Association for Thoracic Surgery (AATS) consensus guidelines: surgical treatment of infective endocarditis: executive summary. *J Thorac Cardiovasc Surg.* 2017;153:1241-58.
2. Habib G, Lancellotti P, Antunes MJ, Bongiorni MG, Casalta JP, Del Zotti F, et al. 2015 ESC guidelines for the management of infective endocarditis: the Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC). Endorsed by: European Association for Cardio-Thoracic Surgery (EACTS), the European Association of Nuclear Medicine (EANM). *Eur Heart J.* 2015;36:3075-128.
3. De Kerchove L, Price J, Tamer S, Glineur D, Momeni M, Noirhomme P, et al. Extending the scope of mitral valve repair in active endocarditis. *J Thorac Cardiovasc Surg.* 2012;143:S91-5.
4. Gaca JG, Sheng S, Daneshmand MA, O'Brien S, Rankin JS, Brennan JM, et al. Outcomes for endocarditis surgery in North America: a simplified risk scoring system. *J Thorac Cardiovasc Surg.* 2011;141:98-106.
5. Perrotta S, Fröjd V, Lepore V, Schersten H, Jeppsson A, Svensson G. Surgical treatment for isolated mitral valve endocarditis: a 16-year single-centre experience. *Eur J Cardiothorac Surg.* 2018;53:576-81.
6. Lee H-A, Cheng Y-T, Wu VC-C, Chou A-H, Chu P-H, Tsai F-C, et al. Nationwide cohort study of mitral valve repair versus replacement for infective endocarditis. *J Thorac Cardiovasc Surg.* 2018;156:1473-83.e2.
7. Toyoda N, Itagaki S, Egorova NN, Tannous H, Anyanwu AC, El-Eshmawi A, et al. Real-world outcomes of surgery for native mitral valve endocarditis. *J Thorac Cardiovasc Surg.* 2017;154:1906-12.
8. Antunes MJ. The real world: what does it mean? Do I belong to it? *J Thorac Cardiovasc Surg.* 2017;154:1913-4.