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Commentary: We should not forget the aortic valve allograft

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Short- and long-term outcomes of surgical treatment of patients with active aortic valve bacterial endocarditis are influenced by multiple factors, including microbiology, patient-related factors, optimal perioperative care, timing of intervention, meticulous surgical techniques, and eventually by the type of the replacement device.¹

Previous studies have suggested that aortic valve allografts were associated with lower rates of early and late re-infections, and, as a consequence, became the valve of choice for treating active aortic valve infections in many centers.² More recently, however, this concept has been challenged, and several reports failed to demonstrate that prosthesis type has significant impact on patient survival and reinfection rates.³⁻⁵

In this issue of the *Journal*, Witten and colleagues⁶ provide us with an extended and detailed analysis on the continuing risks of aortic allograft infection in a large cohort of patients with and without endocarditis and with long-term follow-up extending up to 20 years. The authors conclude that the overall infection risks after aortic valve root replacement are uncommon and possibly lower than conventional replacement devices. However, looking from a different perspective, the data also suggest that, even for allografts, this complication is not negligible, as they demonstrated by the conditional probabilities analysis, which focuses on the risks of intrinsic allograft infection if competing risks are eliminated. The hazards were even greater in patients with endocarditis, emphasizing the importance of patient-related factors.

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CENTRAL MESSAGE

Allografts are resistant to infection and considered the replacement of choice for patients with invasive active endocarditis. However, data to confirm better long-term outcomes are still lacking.

There are no randomized studies comparing allografts with stented prosthesis in patients with active bacterial endocarditis, and the few available observational studies are limited to a relatively small number of patients with only short- to mid-term follow-up.^{4,5} In most of these studies, however, it becomes apparent that patients with complex destructive root anatomies, prosthetic valve endocarditis, and infections caused by resistant fungi or bacteria tended to be more often treated with an allograft root replacement.¹ Unfortunately, the study by Witten and colleagues,⁶ by not including a control group of patients operated with conventional prosthetic valves, does not allow us to make any inference regarding the alleged allograft superior resistance to infection. In that sense, the institutional philosophy to treat noninvasive cases with conventional stented prosthesis and reserve allografts mainly for cases with more advanced root destruction may be considered somewhat empirical and intuitive but still lacks rigorous scientific confirmation and supportive data.

In contrast, we certainly agree with the authors that, from the technical aspect, the soft and pliable tissues of the allograft facilitate a perfect anatomical reconstruction of the aortic root, minimize the need of using external foreign material support such as Teflon felts or pericardial strips, and provide better hemodynamic characteristics and laminar flow when compared with other replacement devices, all

FIGURE 1. Aortic valve allograft replacing the aortic valve, root, and ascending aorta.

of which are strong arguments in favor of the aortic root allograft replacement.¹ We also concur with the authors that the aortic valve allograft should not be abandoned and, when performed in experienced centers, is a valuable alternative not only in patients with endocarditis but also in cases with small aortic roots, complex redo scenarios, and in some younger patients who may not be candidates

for a Ross operation and have contraindications or are not willing to be in permanent anticoagulation (Figure 1).^{1,3}

The ability to perform aortic root replacement with similar results compared with conventional aortic valve replacement coupled with newer tissue-processing technologies such as decellularization that may improve long-term allograft durability may renew the interest for broader indications of the aortic allograft.^{7,8} However, this will need to be supported by strong scientific data, such as those provided by Witten and colleagues.

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