Does type of prosthesis affect long-term outcomes after aortic valve replacement for infective endocarditis? How should we properly answer this question?

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The surgical treatment of active infective endocarditis (IE) is challenging, and the type of prosthesis to be implanted during the active phase remains controversial.¹⁻³ Because of major concerns regarding the use of foreign artificial materials such as conventional mechanical or stented bioprosthetic valves, homografts have been advocated for their favorable long-term outcomes, especially in cases involving prosthetic valve endocarditis (PVE), aortic annular disruption, fistula, or abscess.^{4,5}

Kim and colleagues⁶ challenged this surgical dogma and report a 2-institution retrospective study comparing early and late outcomes among homografts, xenografts (bioprostheses), and mechanical valves. They conclude that no significant benefits of using homografts were demonstrated in terms of resistance to reinfection in the setting of aortic valve IE.

European homograft experts criticized this large-scale retrospective review because of the relatively short follow-up period, large number (20%) of patients lost to follow-up, and significant imbalance in indications for homograft use.⁷ They reiterated the advantage of homografts, especially for severe types of aortic valve IE, including PVE, annular abscess, fistula, and disruption.⁷ Although the homograft implantation outcomes reported by Nappi and colleagues⁷ were excellent, other surgical teams have reported that the implantation of conventional prostheses during the active phase of aortic valve endocarditis provide similar outcomes as aortic homografts, even in patients with annular abscess.^{2,8} Moreover, several reports have raised concerns regarding early mortality and morbidity⁹ as well as the high mortality rate in reoperations for homograft endocarditis.¹⁰

How should this question be properly answered? The Society of Thoracic Surgeons guidelines recommend the following¹¹:

1. When periannular abscess is associated with IE, it is reasonable to use a mechanical or stented tissue valve

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Central Message

To define the best treatment modality for extensive infective endocarditis, a large-scale international prospective registry is necessary to compare the outcomes of homograft versus prosthetic valve implantation.

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if radical debridement is carried out and the valve can be anchored to healthy and strong tissue (Class IIa, Level of evidence B).

2. Aortic homografts are considered reasonable for native aortic valve endocarditis particularly with “periannular abscess and extensive annular or aortic wall destruction requiring aortic root replacement/reconstruction or extensive aortic-ventricular discontinuity” (Class IIb, Level of evidence B).

Both of these recommendations are categorized as Class II, indicating that there is conflicting evidence and/or a divergence of opinion related to the usefulness/efficacy of a procedure or treatment. The usefulness/efficacy of aortic homograft is less well established by evidence/opinion (categorized as Class IIb) because data are derived from a single randomized trial or from nonrandomized studies (Level of evidence B).

No surgeon argues that “a mechanical or stented tissue valve is reasonable in native aortic valve endocarditis if the infection is limited to the native aortic valve or to the aortic annulus.”¹¹ As such, we should focus on the severe

types of IE, including PVE and extensive IE associated with periannular abscess, extensive aortic wall destruction, or aortic-ventricular discontinuity. Only a large-scale, international prospective registry with long-term complete follow-up to compare homograft implantation versus prosthetic valve implantation associated with radical debridement of infected tissue followed by appropriate reconstruction of the aortic root with bovine pericardium can answer this critical question.

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