

Commentary: Tissue is the issue—Bioprosthetic versus mechanical valves in dialysis-dependent patients



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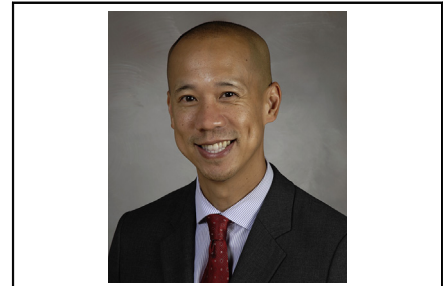
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For dialysis-dependent patients requiring valve replacement, controversy remains as to whether mechanical or tissue valves are preferred. Historically, guidelines¹ have recommended mechanical valves in patients with end-stage renal disease (ESRD) because of concern for calcific structural valve deterioration (SVD); however, limited survival of patients with ESRD requiring valve replacement² has called such benefit into question.³

In this issue of the *Journal*, Ikeno and colleagues⁴ present a cohort of 312 dialysis-dependent patients across 7 Japanese centers requiring either mechanical (n = 94) or bioprosthetic (n = 218) valve replacement. Intermediate-term reoperation rates and survival were similar between mechanical and bioprosthetic groups and comparable to previous reports,³ whereas thromboembolic complications were increased among patients receiving mechanical valves. On subgroup analysis by valve position, increased thromboembolic complications were seen among patients undergoing mechanical versus bioprosthetic aortic valve replacement (AVR), without differences among patients undergoing mitral valve replacement or double valve replacement. Ikeno and colleagues⁴ conclude that bioprosthetic valve replacement in patients with ESRD may reduce thromboembolic events without increased rates of SVD, and we congratulate them for their work.

One critique is the substantial heterogeneity of operations performed. Comparing bioprosthetic versus mechanical groups, rates for AVR (83.9% vs 47.9%; $P < .001$), mitral valve repair (14.2% vs 4.3%; $P = .006$), mitral valve replacement (10.6% vs 36.2%; $P < .001$), and double valve replacement (5.5% vs 16.0%; $P = .004$) were each different. Propensity scoring may have helped to account for these differences, although sample size might then have proved limiting. Although the generous approach to subject inclusion of Ikeno and colleagues⁴ increases statistical power for overall comparisons and possibly external validity to the greater dialysis-dependent population, it



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Central Message

In dialysis-dependent patients, bioprosthetic valve replacement appears safe in terms of thromboembolic events, reoperation rates, and survival, while allowing for future valve-in-valve therapy.

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also imparts substantial bias, which they appropriately point out.

Reduced thrombotic complications also contradict the findings of Nakatsu and colleagues,⁵ who recently examined 491 dialysis-dependent patients requiring mechanical versus bioprosthetic AVR across 18 Japanese centers and found no difference in thromboembolic events at 5-year follow-up. In contrast to Ikeno and colleagues⁴ and colleagues, Nakatsu and colleagues⁵ focused on patients requiring AVR, and their larger sample size may have allowed them better to capture a representative sample of this specific subpopulation, without necessarily offering generalizability to patients requiring mitral valve replacement or double valve replacement.

One caveat not addressed in either publication is the possibility for valve-in-valve (ViV) transcatheter aortic and/or mitral valve replacement for postoperative SVD. ViV therapy is an option in high-risk patients, and ESRD was present in approximately half of patients treated with ViV aortic⁶ and mitral⁷ valve replacement in studies affirming the safety and efficacy of these techniques. Thinking ahead, an added benefit of initial bioprosthetic valve replacement in patients with ESRD is that ViV options remain available should evidence of SVD arise. Conversely, mechanical valve dysfunction after replacement compels patients with ESRD to undergo a high-risk open reoperation.

Ikeno and colleagues⁴ add to the growing body of literature that bioprosthetic valve replacement in dialysis-dependent patients is safe,³⁻⁵ also suggesting reduced thromboembolic complications with this approach, and we commend them for their work. In patients with ESRD, when tissue is the issue, perhaps bioprosthetic valves should be favored at the time of initial replacement and this issue revisited for ViV treatment of postoperative bioprosthetic SVD. It appears that tissue should be the issue when dealing with patients with ESRD requiring valve replacements.

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