Commentary: Expanded options for dialysis-dependent patients requiring valve replacement in the transcatheter era

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In a meta-analysis of 10,164 patients in 24 observational studies, Chi and colleagues compare long-term survival, bleeding, and structural valve degeneration between mechanical versus bioprosthetic valves in patients undergoing surgical aortic valve replacement (AVR), mitral valve replacement (MVR), or double valve replacement. A long-term survival benefit was found for mechanical compared with bioprosthetic valves in the aortic position, but not the mitral position. As expected, mechanical valves conferred a higher risk of bleeding when international normalized ratio was >2.5 and structural valve degeneration was lower for mechanical valves. In contrast to prior meta-analyses, this study stratified outcomes by aortic versus mitral position, which is important for decision making. In addition, the study includes a large number of patients in this small, but high-risk group undergoing cardiac surgery. However, the study is unable to inform age-specific prognosis, which is essential to choosing a valve type. Additionally, it is unknown how many patients received anticoagulation therapy preoperatively for other indications, which could also influence valve selection.

The emergence of transcatheter options for valve replacement (transcatheter mitral valve replacement [TMVR] and transcatheter aortic valve replacement [TAVR]) has influenced the decision making process of valve choice for MVR and AVR. Although these data inform the choice of surgical valve, TMVR and TAVR outcomes are not included and many studies in the meta-analysis took place before transcatheter options were routinely utilized. Accordingly, these data do not fully reflect the current decision-making process for dialysis-dependent patients.

For MVR, mechanical valves have been shown to carry an increased risk of thromboembolic complications and bleeding, but lower reoperation rate and potentially superior survival over bioprosthetic valves when performed in young patients. However, long-term survival estimates are not quantified in this meta-analysis of dialysis-dependent patients for whom prognosis is poor. Our preference for bioprosthetic MVR of unrepairable valves has been reinforced by the emergence of percutaneous, transcatheter, transapical options for valve-in-valve TMVR, with excellent success and low rates of residual mitral regurgitation. These transcatheter options for future reintervention have also lowered our threshold for choosing primary surgical replacement over repair for rheumatic valves with calcified, immobile anterior leaflets.

We have implanted more than 2000 stentless aortic valve bioprostheses that were durable overall, but with an increased reoperation rate for patients younger than age 60 years. Reinterventions have included redo aortic root replacement, stented bioprostheses implanted into existing stentless bioprosthetic roots, and more than 100 TAV-in-stentless procedures. Only 90 patients in the series were dialysis-dependent and 5-year survival was <50%.
Because long-term prognosis for dialysis-dependent patients is poor, we prefer TAVR as our initial strategy for most of these patients.

Because in-hospital mortality is high and prognosis is so poor for dialysis patients undergoing surgical or transcatheter valve replacement, choosing a valve and approach to achieve short- and midterm success may be more important than basing the decision on long-term durability in these patients. For patients who do survive long term, we have successfully performed more than 250 TMVR and TAVR valve-in-valve procedures implanting transcatheter valves into failed surgical bioprostheses.

In conclusion, we commend the authors for this contribution and recommend transcatheter or surgical bioprostheses over mechanical valves for dialysis-dependent patients requiring MVR or AVR.

References