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EDITORIAL

Mid-Term Reassurance, Long-Term Questions: Reintervention After TAVR

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The rapid evolution of transcatheter aortic valve replacement (TAVR) has fundamentally transformed the management of severe aortic stenosis. Initially reserved for inoperable or high-risk patients, TAVR has steadily expanded across the full surgical risk spectrum, including younger individuals with longer life expectancy. As this transition progresses, focus has shifted from procedural success toward a more fundamental question: how durable are transcatheter valves over the long term, and what role will reintervention play in the lifetime management of aortic valve disease?

Long-term follow-up from landmark randomized trials recently updated in *The New England Journal of Medicine* and *JACC* is beginning to provide crucial insights as the field approaches the 7-year horizon. In the PARTNER 3 trial evaluating balloon-expandable valves in low-risk patients, extended follow-up shows sustained clinical outcomes with low rates of structural valve failure and reintervention, broadly comparable to surgical bioprosthetic replacement.[1] Similarly, follow-up from the Evolut Low Risk trial assessing self-expanding valves confirms excellent hemodynamic performance through 6–7 years, while highlighting a gradual accumulation of valve-related events over time.[2]

These findings provide reassuring evidence that contemporary transcatheter valves perform well through the mid-term period. Yet they also mark a pivotal transition. For the first time, durability curves are extending into the period when structural valve deterioration historically emerges in surgical bioprostheses typically beyond the first decade after implantation. Consequently, interpreting reintervention rates requires careful clinical context.

Randomized trials offer the most rigorous framework for evaluating device durability. Patients enrolled in studies such as PARTNER 3 and Evolut Low Risk follow structured protocols that include regular clinical assessment and scheduled echocardiographic surveillance. Valve hemodynamics are closely monitored, and potential valve dysfunction is assessed using standardized definitions and independent adjudication committees. Within this framework, reintervention reflects a carefully considered clinical decision guided by systematic surveillance.

In contrast, real-world practice is far less uniform. Outside the trial environment, follow-up imaging varies substantially, and thresholds for repeat intervention differ across institutions and operators. In elderly or highly comorbid patients, clinicians may adopt conservative management even when valve dysfunction is detected. Conversely, specialized structural heart programs may perform earlier redo procedures in selected patients with symptomatic valve failure. As a result, observed reintervention rates in routine practice reflect not only valve durability but also differences in clinical decision-making, institutional expertise, and patient selection.

This distinction becomes increasingly relevant as TAVR moves into younger populations. In the earliest TAVR cohorts—largely high-risk, older patients overall mortality limited the number of individuals surviving long enough to develop structural valve deterioration. In contemporary low-risk populations, life expectancy is substantially longer, making valve durability a key determinant of long-term procedural success. Thus, longer-term follow-up from randomized trials is critical to understanding how transcatheter valves may perform over decades rather than years.

Another significant development is the growing feasibility of redo TAVR procedures and the emergence of a "lifetime management" approach for aortic valve disease. Valve-in-valve TAVR has shown high procedural success and favorable early outcomes in observational studies.[3,4] As experience with repeat transcatheter interventions increases, reintervention may be seen not merely as a therapy failure but as a component of longitudinal disease management. Nevertheless, the mechanism and timing of initial valve dysfunction—whether due to structural valve degeneration, progressive regurgitation, or prosthesis–patient mismatch may strongly influence the feasibility and success of subsequent procedures.

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These considerations underscore the need for ongoing data generation and careful interpretation of durability trends. Extended follow-up from contemporary randomized trials will be essential. As the PARTNER 3 and Evolut Low Risk cohorts approach the 10-year mark, they will provide crucial insights into whether durability trends stabilize or accelerate. Greater emphasis should also be placed on mechanistic characterization of bioprosthetic valve dysfunction rather than relying solely on reintervention as an endpoint. The VARC-3 consensus definitions provide a framework to distinguish structural valve deterioration, non-structural valve dysfunction, and clinical valve failure.[5] Finally, these emerging durability data must inform heart-team discussions when selecting the optimal initial treatment strategy for younger patients likely to require multiple valve procedures over their lifetime.

In summary, seven-year data from randomized trials suggest that contemporary TAVR platforms remain highly effective through the mid-term period, with relatively low rates of valve failure and reintervention. At the same time, extending follow-up into longer time horizons reminds us that midterm reassurance should not be mistaken for definitive long-term durability. As the field moves toward a lifetime management paradigm for aortic valve disease, careful interpretation of reintervention trends—and continued surveillance of valve performance will remain essential for guiding patient selection and ensuring long-term outcomes in younger TAVR recipients.

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