

RATE OF VALVE REINTERVENTION IN PATIENTS UNDERGOING TRANSCATHETER AORTIC VALVE IMPLANTATION: A SYSTEMATIC REVIEW

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INTRODUCTION:

Transcatheter aortic valve implantation (TAVI) is a minimally invasive therapy that—despite delivering significant clinical benefits, carries the adverse outcome of valve reintervention (VRI) during long-term post-TAVI follow-up. This complication may result from significant paravalvular leak (PVL), structural valve degeneration (SVD), or infectious endocarditis, thereby compromising both clinical course and treatment durability.

OBJECTIVE:

To identify the prevalence of VRI in patients with aortic stenosis that undergone TAVI.

METHODOLOGY:

This review was registered on PROSPERO (CRD420251037558) and conducted in accordance with PRISMA guidelines. We searched PubMed, the Cochrane Library, LILACS, and VHS using the descriptors “Adverse Effects,” “Transcatheter Aortic Valve Implantation,” and “Prevalence” (Boolean AND). The guiding question was: “In patients post-TAVI, what is the prevalence of VRI?” (PEO model). After duplicate removal in Rayyan (n = 3,206), 2,646 studies remained for title/abstract screening. Of these, 174 were assessed in full text. We included primary studies enrolling ≥ 30 adult TAVI patients that reported quantitative data on adverse effects with up to 10 years of follow-up. We excluded articles with aggregated data lacking absolute numbers, reviews, meta-analyses, unavailable full texts, pediatric populations, or duplicate data (retaining the most recent or complete version). Twelve studies were included.

RESULTS:

VRI rates after TAVI vary according to follow-up duration and clinical profile of the population. In a 10-year follow-up study, the reintervention rate was 7.5% (Thyregod et al.), whereas in a 2-year follow-up it was 1.4% (Leon et al., PARTNER 2), suggesting that most events occur in later phases. Among causes associated with short- and mid-term reintervention, moderate to severe PVL stands out, with an incidence of 14% (Kodali et al.), and is linked to worse clinical outcomes. SVD also emerges as an important cause in prolonged follow-up, contributing to late valve failure. Another relevant risk factor is infectious endocarditis, identified in 1.2% of patients in the PARTNER 2 study (Leon et al., 2024), a condition that frequently necessitates repeat therapeutic intervention.

CONCLUSION:

Although uncommon in the early years, VRI post-TAVI is a clinically relevant outcome - especially during long-term follow-up - associated with factors that compromise prosthesis durability and clinical stability. These findings underscore the importance of ongoing clinical and imaging surveillance focusing on structural and infectious changes that may necessitate reintervention.

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