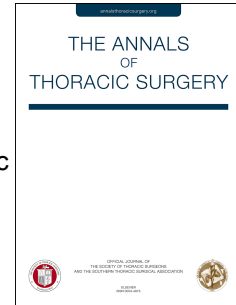


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The Incidence and Consequence of Prosthesis Patient Mismatch After Surgical Aortic Valve Replacement (Commentary)

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## The Incidence and Consequence of Prosthesis Patient Mismatch After Surgical Aortic Valve Replacement (Commentary)

Fallon *et al* [1] report on the incidence and outcomes of prosthesis-patient mismatch (PPM) in patients undergoing isolated surgical aortic valve replacement (AVR) for aortic stenosis (AS). In an analysis of nearly 60,000 cases in the STS Adult Cardiac Surgery Database from 2004-2014, the authors found that patients with moderate or severe PPM by standard definitions had worse survival, increased risk of readmission for congestive heart failure, and increased risk for redo AVR. They also reported a significant decrease in the incidence of PPM over the study period, which they attribute to increased awareness of PPM, and to the newer generation of prostheses enabling larger effective orifice areas (EOA) with improved hemodynamics. Nevertheless, the incidence of at least moderate PPM in the study era was reported at 47%.

Moderate PPM has been previously reported to negatively impact outcomes predominantly amongst patients of younger age, with depressed LV systolic function, severe LV hypertrophy, concomitant mitral regurgitation, or with low flow low gradient aortic stenosis [2]. While the study by Fallon *et al.* would indicate that moderate PPM is associated with poor long-term outcomes even in patients without these features, the modest effect size demonstrated by the only mildly elevated hazard ratios, combined with the lack of echocardiographic data beyond LV ejection fraction make it difficult to determine the true mechanistic impact of PPM in this large cohort.

Of particular importance is the lack of data on LV mass regression, which would corroborate and strengthen the attributed role of PPM on the adverse clinical outcomes observed in Fallon's cohort [3]. Considering the pathophysiologic changes in aortic stenosis, from increased LV wall stress to LV hypertrophy to progressive myocardial fibrosis, the characterization of the left ventricle preoperatively may inform valve selection and, likely, prognosis. Previously, Tasca *et al* [4] reported that a larger change in the EOA from its pre-

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