

## Improvement in Left Ventricular Diastolic Function after Transcatheter Aortic Valve Replacement

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Transcatheter aortic valve replacement (TAVR) improves survival in patients with symptomatic severe aortic stenosis (AS) who are considered at intermediate to high surgical risk or who have contraindications for surgery. In recent large TAVR registry, approximately 15% of patients were rehospitalized because of heart failure during the first year despite relief of valvular obstruction. One of the potential factors related to heart failure following TAVR is left ventricular (LV) diastolic dysfunction. We retrospectively reviewed clinical and serial echocardiographic data before and after TAVR together with measurement of mitral annular displacement (MAD) representing longitudinal myocardial function in 98 patients with severe aortic stenosis and LV ejection fraction (EF) >55%. Diastolic function (DF) grade was determined as 0–III according to the current guideline. The present study demonstrated (1) an improvement in DF grade was shown in a stepwise fashion, namely 22%, 34%, and 60% at 1-day, 1-month, and 1-year follow-up, respectively, among patients with severe symptomatic AS and preserved LVEF; (2) patients with post-TAVR DF improvement had more favorable clinical, hemodynamic and prognostic outcomes; and (3) on multivariable analysis, absence of CAD and preserved MAD were independently associated with the occurrence of post-TAVR DF improvement. In addition, MAD inversely correlated with the degree of late gadolinium enhancement in cardiac magnetic resonance, indicating the subendocardium to be affected by inducible fibrotic processes. Based on our findings, the measurement of MAD may be helpful in identifying patients who will have DF improvement and better cardiac outcomes after TAVR.

In summary, post-TAVR DF improvement is often observed at 1 year in patients with severe AS and preserved LVEF, and when present may be accompanied by more favorable clinical, hemodynamic, and prognostic outcomes. Preserved LV longitudinal myocardial function, as assessed by MAD, had a strong association to post-TAVR DF improvement, which is related to a decreased risk of cardiac events. Thus, a comprehensive assessment of cardiac function, including the measurement of MAD, would be useful for risk stratification following TAVR in this population.

