Anterior leaflet splitting during transcatheter mitral valve replacement: Killing two birds with one stone?

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Thanks to the dynamic evolution of surgical repair techniques and the introduction of less invasive and even robotic strategies, perioperative complication rates and long-term durability of mitral valve (MV) surgery have constantly improved in the past decades. Consistent with this evolution, the recent focused update of the 2014 American Heart Association and American College of Cardiology guidelines for the management of patients with valvular heart disease still recommends surgical repair or replacement as the preferred treatment for primary or secondary MV disease.

Encouraged by the excellent results of transcatheter aortic valve replacement and the early clinical experience with the MitraClip device (Abbott Vascular, Santa Clara, Calif), several transcatheter MV repair and MV replacement (TMVR) technologies that will most certainly redefine the future of MV therapy are currently being introduced. Importantly, the growing expertise of the heart valve team doing transcatheter MV interventions in patients judged not to be operative candidates has led to significant advancements during the past years. Nonetheless, several important and MV-specific challenges still need to be resolved, especially for TMVR, including the optimal access route, anchoring site, and positioning of the transcatheter valve to avoid paravalvular leaks or left ventricular outflow tract obstruction (LVOTO).

Indeed, LVOTO after TMVR poses a significant clinical problem. Several predictors, including septal hypertrophy, a small left ventricular cavity, an aorta-mitral-annular angle (AMA) of less than 135°, and a length of the anterior MV leaflet (AML) greater than 30 mm have been previously identified. Thus, exact periprocedural imaging of the underlying anatomy of the MV and the left ventricular outflow tract seems mandatory for choosing the optimal TMVR strategy.

In this issue of the Journal, Lee and colleagues have added another valuable tool to the TMVR armamentarium by evolving an old surgery-based technique into a novel transcatheter approach. Although Lee and colleagues correctly highlight in their discussion that the AML splitting technique should be avoided in the presence of a calcified AML or in patients with previous MitraClip repair, this technique still has the potential to

Central Message
A novel technique with splitting of the anterior mitral valve leaflet that is used to prevent left ventricular outflow tract obstruction during transcatheter mitral valve replacement is described.
become an excellent option for patients with previous surgical MV repair who are not operative candidates and are at risk for LVOTO. Second, the well-balanced approach of Lee and colleagues,7 with meticulous preprocedural imaging and temporary cardiopulmonary bypass support during AML splitting and TMVR, underscores the exceptional ability of a well-structured heart valve team to enable a less invasive, safe treatment of complex MV pathologies in patients who would otherwise not be able to undergo intervention. Whether the proposed transcatheter AML splitting technique will finally resolve the issue of LVOTO after TMVR needs to be evaluated in larger patient cohorts. Most importantly, however, the pursuit of more clearly defined periprocedural risk factors for LVOTO in TMVR needs to be continued so that we can identify patients who may benefit from this novel technique.

References