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Editorial

Management of mitral regurgitation and transcatheter aortic valve replacement☆,☆☆

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Mitral regurgitation (MR) is common among patients with severe aortic stenosis (AS), but its management remains largely empirical. Conflicting results have been reported on how MR impacts on outcomes after surgical or transcatheter aortic valve replacement (TAVR), and the effects of aortic valve replacement on the evolution of MR are largely unpredictable [1]. The optimal management strategy therefore remains controversial, particularly when MR is less than severe. In the study by Abdelghani et al. presented elsewhere in this issue of the Journal, MR had improved in the majority of patients by 30 days post-TAVR and residual MR at this time point continued to improve subsequently, emerging as an independent determinant of long-term outcomes [2].

Concomitant MR can influence decision making in patients with severe AS. Indeed, by preventing the clinical benefit of an otherwise successful aortic valve procedure, severe MR may render TAVR futile. Even with the increased operative risk, significant MR at baseline is usually considered an indication for a double-valve surgical procedure [3,4]. Thus, identifying the patients with the greatest likelihood of spontaneous MR improvement after TAVR is of utmost importance. The etiology of the MR is a main predictor of post-operative MR changes in patients undergoing aortic valve replacement [5]. Secondary MR is more likely to improve after aortic valve replacement than is primary MR, but whether MR etiology also influences mortality rates remains unclear. The lack of information on MR etiology is thus an important limitation of the study by Abdelghani et al. Left ventricular (LV) dysfunction and dilatation, reflecting a potential for reverse LV remodeling, are also predictors of improvement in MR after aortic valve replacement [5]. Conversely, left atrial dilatation, atrial fibrillation and pulmonary hypertension are associated with less marked improvement or even with increased MR severity [5]. However, determining the likely evolution of MR after aortic valve replacement remains difficult in individual patients, and clinical judgment with careful patient evaluation remains pivotal in selecting the best therapeutic approach. Procedural characteristics, including the type of prosthesis, may also influence the postoperative evolution of MR [6–8]. In the study by Abdelghani et al., the improvement in MR was less marked when Medtronic self-expandable CoreValve prostheses were used than with balloon-expandable valves. Interestingly, their results do not support a role of residual prosthetic valve regurgitation or left ventricular dyssynchrony resulting from new left bundle branch block or post-pacemaker implantation in the worse evolution of MR after CoreValve implantation, unlike what had been previously suggested, highlighting the role of mechanical interference between the prosthesis and the mitral valve [2]. This observation may suggest that balloon-expandable prostheses should be preferred in patients with moderate or severe MR undergoing TAVR. However, because no prospective comparative study between balloon- and self-expandable prostheses has been conducted, firm conclusions on the potential deleterious role of a given prosthesis cannot be drawn; moreover next generation devices may have a more favorable profile in this respect.

Although the negative prognostic value of residual MR may argue for a more aggressive therapeutic approach, residual MR could also be just a marker of less reverse cardiac remodeling. As such, it is unclear whether aggressive treatment of MR would favorably impact on prognosis.

Transcatheter approaches currently have a limited place in the management of residual MR after TAVR. In a large multicenter study, only 13% of patients with significant MR occurring or persisting after TAVR were deemed suitable candidates for percutaneous mitral valve repair with either the MitraClip or balloon-expandable valve [9]. However, it is likely that technological advances will soon help expand the indications for transcatheter MR treatment. Although standard practice is to perform double-valve surgery if severe residual MR is expected in patients with an acceptable operative risk, it is likely that staged transcatheter approaches, in which MR severity is re-evaluated following TAVR, will become standard strategy. This approach will undoubtedly alter the management paradigm of patients with combined AS and MR. In this context, by highlighting the biphasic changes in MR following the TAVR procedure -an early reduction in MR severity mainly driven by the acute reduction in the systolic transmitral pressure gradient [10] followed by a later improvement extending to several month after

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TAVR as a result of reverse LV remodeling- the study by Abdelghani et al. provides important insight into the evolution of MR in this setting [2], and suggests that, for patients with residual MR after TAVR, transcatheter management of MR might be deferred for several months to allow time for maximum spontaneous improvement in MR to occur. In addition, Abdelghani et al. show that, although MR improves in a majority of patients following TAVR, severe MR may, albeit infrequently, develop in patients without significant MR at baseline or at 30 days [2], thus stressing the need for all patients undergoing TAVR to be closely followed for the development of MR.

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