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Editorial

Transcatheter Mitral Valve Repair: Growing Evidence Regarding It's Efficacy and Optimal Indication

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A significant proportion of patients with severe mitral regurgitation (MR) do not undergo surgical repair or replacement due to age, comorbidities or severe left ventricular (LV) dysfunction. Furthermore, benefits from surgery in these high-risk patients are uncertain.[1-3] Transcatheter mitral valve repair has emerged as an established treatment option for high surgical risk patients with severe MR. Among them, MitraClip (Abbott Vascular, Santa Clara, CA, USA) is the major commercially available technology using the edge-to edge technique for valve repair and has achieved both Food and Drug Administration (FDA) and CE Mark approval.

Lee et al.[4] reported the results of 46 patients with severe MR who underwent MitraClip in a single center. In this retrospective study, the authors demonstrated that all the patients, regardless of age, benefited from significant improvement in New York Heart Association (NYHA) functional class and 6-minute walk test. Moreover, overall 1-year survival rate was comparable in older age group compared to younger aged group. As data involving transcatheter mitral valve repair in the Asian population are scarce,[5] the fact that MitraClip showed favorable results in the Asian population and that such results are consistent with previous studies involving western population could be meaningful.

However, the results of the current study should be cautiously interpreted. As the author already mentioned as a limitation, there was a significant difference in MR etiology. The proportion of degenerative MR was significantly higher in older patients while functional MR was predominant in younger patients. As secondary or functional MR is developed due to leaflet tethering and mitral annular dilatation caused by LV remodeling from ischemic or non-ischemic cardiomyopathy, it is closely related to poor prognosis especially in patients with decreased LV systolic function. Although LV ejection fraction and other baseline characteristics were adjusted by multiple logistic regression, the effect of age on all cause death could still be attenuated especially in a study with a small number of patients.

Regarding the indication of transcatheter mitral valve repair, both American Heart Association/American College of Cardiology (AHA/ACC) and European Society of Cardiology/European Association of Cardiovascular Surgery (ESC/EACTS) guidelines recommended that in patients with primary or degenerative MR who have a prohibitive surgical risk, transcatheter mitral valve repair may be considered (class IIb, level of evidence B in AHA/

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ACC guideline, and class IIb, level of evidence C in ESC/EACTS guideline).[6][7] However, in the case of secondary or functional MR, the effect of transcatheter mitral valve repair on clinical outcome needs to be further investigated. Recently, 2 randomized controlled trials, Multicentre Study of Percutaneous Mitral Valve Repair MitraClip Device in Patients With Severe Secondary Mitral Regurgitation (MITRA-FR) and Cardiovascular Outcomes Assessment of the MitraClip Percutaneous Therapy for Heart Failure Patients With Functional Mitral Regurgitation (COAPT), showed discrepant results on efficacy of MitraClip in patients with heart failure and functional MR.[8][9] It suggests that, in patients with functional MR, further study would be needed regarding the appropriate indication of MitraClip to achieve additional clinical benefit beyond conventional treatment.

Since the Endovascular Valve Edge-to-Edge Repair Study (EVEREST II) trial first introduced,[10] several studies provide growing evidence of long term efficacy and safety in patients with transcatheter mitral valve repair. Among them, Kar et al.[11] demonstrated long term safety and efficacy of MitraClip in high surgical risk patients which showed durable improvement NYHA class in surviving patients. In the study, the observed mortality was most likely a consequence of the advanced age and comorbidity.

In aged patients, not only progression of cardiovascular disease, but also the risk of open heart surgery increase and transcatheter mitral valve repair may satisfy these unmet needs. To accurately predict the potential benefit of transcatheter mitral valve repair compared to surgery or medical treatment and to achieve the benefit and avoid futility, clarification of MR etiology and careful interpretation would be indispensable.

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