

## Left ventricular dysfunction before transcatheter aortic valve implantation



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Transcatheter aortic valve implantation (TAVI) has already been established as a viable treatment option for most patients with aortic stenosis. However, left ventricular (LV) systolic dysfunction still remains one of the risk factors for procedural difficulty and poor clinical outcomes.

In this issue of *AsiaIntervention*, Soon et al report the improvement of LV function after TAVI in 662 patients and identify more severe LV systolic dysfunction as an independent predictor of LV recovery. Among patients with severe LV dysfunction (left ventricular ejection fraction [LVEF] <30%), frailty and male gender were identified as independent predictors of LV recovery.

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Although these findings are in line with those from the PARTNER trial<sup>1</sup>, as the authors describe, poor baseline LV function may be associated with worse survival after TAVI. The conclusions from this analysis may suggest that severe LV dysfunction is associated with poor outcomes but also with improvement of LV recovery. One of the most important messages from this study is that the majority of patients with severe LV dysfunction showed LV improvement after

TAVI; therefore, TAVI should not be avoided because of the presence of LV dysfunction. Indeed, recent studies have demonstrated excellent midterm clinical outcome after TAVI. The OCEAN-TAVI Japanese multicenter registry demonstrated overall 30-day mortality and cumulative 1-year mortality to be 1.7% and 11.3%, respectively<sup>2</sup>; most of the patients had non-cardiac death during follow-up. These data suggest that most patients had sufficient clinical benefit after TAVI even with concomitant LV dysfunction. The reason for this finding is unclear; however, the less invasive nature of this procedure could maximise survival benefit by minimising periprocedural complications and death. It was also interesting to see that improvement of LV did not have an impact on late mortality by Kaplan-Meier survival analysis in this study. The lack of a sufficient number of events could be the reason for this finding. Further studies comparing TAVI and surgical aortic valve replacement (SAVR) could be of great interest. The authors also demonstrated that female gender was identified as a predictor of good LV recovery. Female gender is known to lead to better survival after TAVI<sup>3</sup>; better LV recovery could be one of the reasons for this.

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Concomitant aortic stenosis and mitral regurgitation is also a challenging situation. The current ESC/EACTS guidelines identified that mitral disease is one of the favourable factors for choosing a surgical procedure over TAVI<sup>4</sup>. However, improvement of mitral regurgitation after TAVI is sometimes found, especially in case of functional mitral regurgitation with the mechanism of tethering<sup>5,6</sup>. If we could predict LV recovery accurately, this would have an impact on an appropriate selection strategy for patients with aortic stenosis and concomitant mitral regurgitation.

In line with the rapid progress and improvement of TAVI, clinical data after this procedure are improving year by year. This study provides an encouraging message to treat patients with poor LV function. Further studies are needed to clarify this important issue.

### Conflict of interest statement

K. Hayashida is a clinical proctor for Edwards Lifesciences.

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