Early haemodynamic and structural impact of transcatheter aortic valve replacement in pure aortic regurgitation

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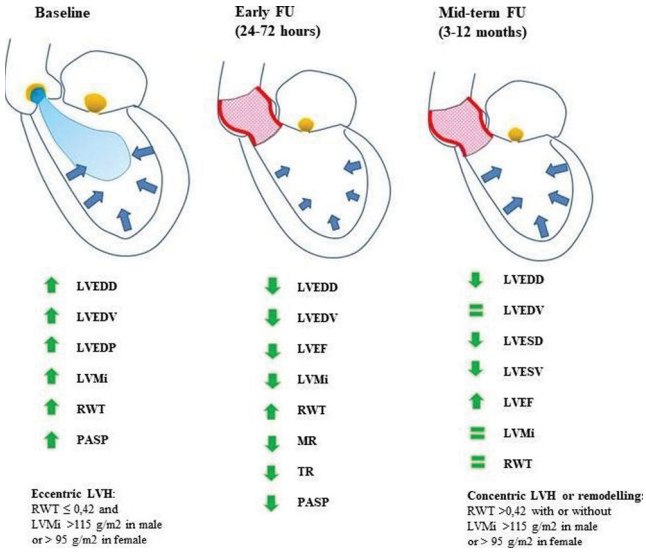
Funding Acknowledgement: Type of funding source: None

Background: Patients with severe aortic regurgitation (AR) are treated by surgery and have variable left-ventricular (LV) "reverse remodelling" after intervention. Transcatheter-aortic-valve replacement (TAVR) might be considered in selected AR patients.
Purpose: To evaluate the hemodynamic and structural impact of TAVR in patients with pure AR.
Methods: Consecutive AR patients underwent TAVR in our Institution were identified. Left heart catheterization before and after TAVR and complete echocardiographic assessment before TAVR, after (24–72 hours) TAVR and at follow-up (3–12 months) were systematically performed.
Hemodynamic and echocardiographic parameters were compared before and after TAVR.
Results: Twenty-two patients with severe AR, high surgical risk and advanced heart damage were treated by TAVR using mainly self-expandable prostheses. The procedure was successful in 21 patients (95.5%). An immediate hemodynamic impact of the TAVR procedure was documented by different parameters and included significant decrease in LV end-diastolic pressure (from 26.2 to 20.1 mmHg, P=0.012). Significant reduction in LV size (left ventricular end diastolic diameter (LVEDD): 60.0±8.0 mm vs 54.6±8.1 mm, p=0.002) and mass (left ventricular mass indexed (LVMi): 163.2±58.8 g/m^2 vs 140.2±45.6 g/m^2, p 0.004) as well as a sharp reduction in systolic-pulmonary-arterial-pressure (48.3±17.6 vs 32.9±7.8 mmHg, p<0.0001) was documented at 24–72 hours. Furthermore, patients with baseline moderate-to-severe mitral and tricuspid regurgitation showed a significant, early, valvular regurgitation reduction. All favourable changes persisted at follow-up. More pronounced LVEDD reduction was predicted by baseline LVEDD (p=0.019).
Conclusions: In patients with severe AR, TAVR determines a profound impact on heart remodelling, which is early detectable and durable.



Impact of TAVR in pure AR