Long-Term survival and functional status in patients with elevated mitral valve pressure gradient after transcatheter mitral valve repair

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Background: A growing number of patients are currently treated for severe mitral regurgitation (MR) using a transcatheter mitral valve repair (TMVr). In clinical routine, the potential risk of elevated post-procedural mitral valve pressure gradient (MPG) may prohibit optimal MR reduction driven by the avoidance of additional clip implantations. Thus, the unfavorable impact on survival and functional outcome of increased MPG in patients undergoing TMVr is currently debatable.

Methods: In this single-center, prospective study, survival and functional outcome of 780 consecutive patients with severe MR undergoing TMVr between September 2008 and January 2020 were investigated. After exclusion of patients with unsuccessful procedure and those lost to follow-up, data of 676 patients with a median follow-up time of 5.26 (5.11, 5.51) years were analyzed. MPG was determined by transthoracic echocardiography at discharge and considered elevated in excess of 4.5 mmHg. Kaplan-Meier analysis as well as multivariable Cox regression models were performed for the impact on elevated MPG on 5-year outcomes for the subgroups of functional MR (FMR) and degenerative MR (DMR). The primary outcome measure was a combined endpoint of death or rehospitalization for congestive heart failure.

Results: Among 676 patients undergoing TMVr (mean age 74.6±8.5 years, 59.0% male, median STS Score 3.9 [interquartile range 2.5; 6.0]), 179 (26.4%) patients had elevated MPG >4.5 mmHg. FMR was present in 426 (63.0%) patients. In the overall patient cohort, Kaplan-Meier and Cox Regression analyses could not demonstrate significant differences for the combined endpoint (p=0.99). In contrast, subgroup analysis according to MR etiology indicated a significant adverse influence of elevated MPG on the combined endpoint as well as functional outcome in patients with DMR, but not with FMR (Figure 1). After adjustment, multivariate Cox Regression analysis showed an inferior prognosis in patients with DMR and elevated MVPG >4.5 mmHg (hazard ratio 1.79 [1.17, 2.72], p=0.0069, Figure 2).

Conclusions: TMVr-patients with DMR and measurable elevated post-procedural MVPG face an inferior prognosis and reduced functional outcomes compared to patients with FMR.

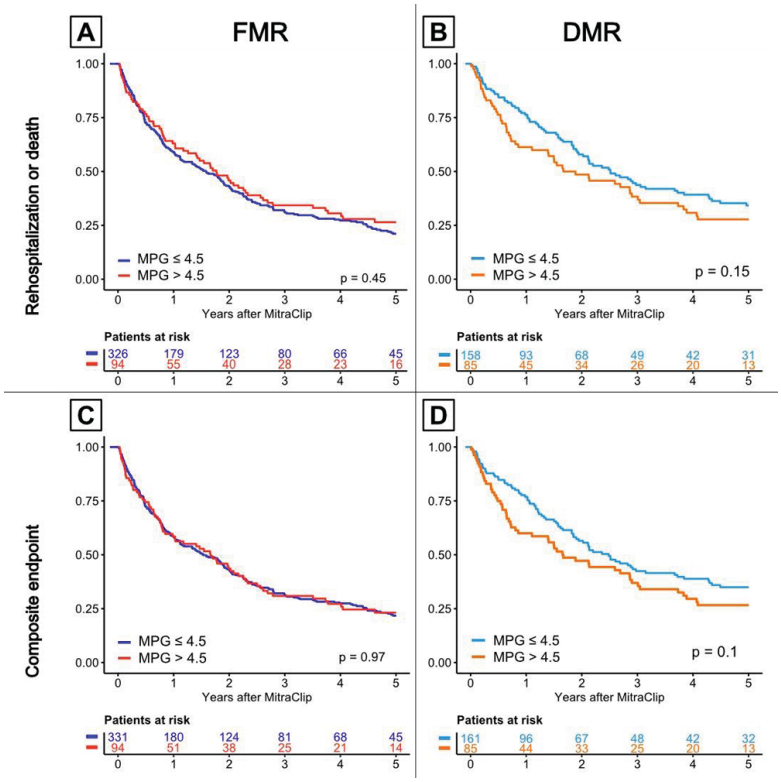

Figure 1

Figure 2