Clinical outcomes of percutaneous mitral valve repair in secondary mitral regurgitation: a systematic review and meta-analysis

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Background: The benefit of percutaneous mitral valve repair with mitraclip (PMVR) in patients with secondary mitral regurgitation (MR) is still debated.

Methods: In order to compare the outcome of PMVR with optimal medical therapy (OMT) versus OMT alone in patients with secondary MR, we performed a systematic review and meta-analysis of 2 randomized clinical trials (RCT) and 7 non-randomized observational studies (nROS). Hazard ratios (HR) and 95% confidence intervals (CI) were pooled through inverse variance random-effect model to compute the summary effect size for all-cause mortality, cardiovascular death and cardiac-related hospitalization. Subgroup and meta-regression analysis were also performed.

Results: An overall population of 3,118 individuals (67% men; mean age, 73 years) was included: 1,775 PMVR+OMT and 1,343 OMT patients, with mean follow-up of 24±15 months. PMVR+OMT was associated with a lower risk of all-cause death (HR:0.77; 95%CI:0.68-0.87), cardiovascular death (HR:0.55; 95%CI:0.34-0.89) and cardiac-related hospitalization (HR:0.77; 95%CI:0.64-0.92). Meta-regression analysis showed that larger left ventricular end-diastolic volume index (LVEDVI) portends higher mortality after PMVR (p<0.001).

Conclusions: This study-level meta-analysis shows that PMVR+OMT is associated with reduced all-cause death, cardiovascular death and cardiac-related hospitalization when compared with OMT alone in secondary MR. LVEDVI is a predictive marker of efficacy, as patients with smaller LVEDVI derive the largest benefit from PMVR.