

Impact of tricuspid valve regurgitation severity and its secondary reduction on long-term survival after transcatheter mitral valve edge-to-edge repair

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Background: Mitral valve regurgitation (MR) is a frequent heart valve disorder affecting 1–2% of the humans in the general population and over 10% of the individuals older than 75 years. While a symptomatic and prognostic benefit of transcatheter edge-to-edge repair for MR (TMVR) was reported, data regarding long-term outcome as well as influence of concomitant tricuspid regurgitation (TR) are sparse.

Purpose: We aimed to investigate the impact of periinterventional development of TR on survival of patients undergoing interventional edge-to-edge repair for MR in a large retrospective monocentric study.

Methods: We retrospectively analyzed survival of patients successfully treated with isolated edge-to-edge repair for MR from 06/2010–03/2018 (exclusion of combined forms of TMVR) in our center. Baseline, periprocedural as well as follow-up data were gathered. Concomitant TR was evaluated at baseline and after 30 days and categorized from grades 0 (no TR) to grade III (severe TR). We analyzed the influence of severe vs. non-severe TR on 30-day, 1-year and long-term survival.

Results: Overall, 627 consecutive patients (47.0% female, 57.4% functional MR) were enrolled. Median follow-up time was 462 days [IQR 142–945]. Survival status was available in 96.7%. Survival rates were 97.6% at discharge, 75.7% after 1, 54.5% after 3, 37.6% after 5 and 21.7% after 7 years.

TR at baseline (examination results were available in 92.3%) was cate-

gorized as severe TR in 25.6%, medium TR in 33.3%, mild TR in 35.1% and no TR in 6.0%. TR at 1 month (examination results were available in 81.1%) was severe in 16.7%, medium in 30.2%, mild in 45.6% and no TR was found in 7.4%; improvement by at least 1 TR-grade was documented in 33.6% of the patients.

While a severe (compared to non-severe) TR at baseline did not affect the 30-day mortality (7.4% vs. 5.2%, $p=0.354$), 1-year survival was substantially impaired in those patients (36.5% vs. 23.0%, $p=0.012$). Accordingly, severe TR was not associated with 30d-mortality (as evaluated by univariate Cox regression, $p=0.340$), but with 1-year survival (HR 1.78, 95% CI 1.19–2.65, $p=0.005$) and showed a trend towards impaired long-term survival (HR 1.30, 95% CI 0.96–1.76, $p=0.089$).

While residual severe TR at one month did not influence 1-year-mortality significantly ($p=0.478$), improvement of TR demonstrated a trend to better survival after the first year (86.9 vs. 81.0%, $p=0.208$) confirmed in the Cox regression analysis (HR 0.66, 95% CI 0.36–1.22, $p=0.188$).

Conclusions: In this large retrospective monocentric study with a long-term follow-up-period of >7 years after edge-to-edge therapy for MR, we demonstrated that severe TR at the time of the intervention had an impact on 1-year-survival. Furthermore, a missing periinterventional improvement of TR was shown to be unfavorable regarding the long-term survival of these patients.