Background: Tricuspid regurgitation (TR) has long been neglected due to limited therapeutic options. Within the past five years, transcatheter tricuspid valve edge-to-edge repair (T-TEER) has become a valuable tool in the treatment of TR besides diuretic medical therapy and valve surgery. Owing its novelty, data on long-term survival after T-TEER for relevant TR are sparse. Beyond that, there is uncertainty on the impact of TR reduction on outcomes after successful T-TEER.

Purpose: This study sought to investigate long-term survival outcome after T-TEER for relevant symptomatic TR. We evaluated the impact of TR reduction on outcome in patients with successful T-TEER.

Methods: Consecutive patients who underwent successful isolated T-TEER for relevant TR from 2016 until 2022 at a high-volume university center were included in the study. Procedural success was defined as at least one degree TR reduction. Long-term survival endpoint was three-year all-cause mortality. Survival follow-up was completed via phone calls with the patients themselves, the next of kin, local practitioners and using the German national population registry. Post-procedural TR was assessed by interventionalist and echocardiographer at the end of the T-TEER procedure.

Results: A total of 244 patients who underwent successful T-TEER in the study period were included in the present analysis (mean age 77.7±8.7 years; 50.8% female). Patients were highly symptomatic as represented by New York Heart Association functional class ≥ III in 95.9% of cases. TR was 4+ in 128 patients (52.2%), 3+ in 106 patients (43.4%) and 2+ in 10 patients (6.1%). The etiology of TR was predominately functional (88.5%), while 5.4% presented with degenerative TR and 6.1% with TR of mixed etiology. Median time to last contact or death was 365 days (interquartile range 166–809 days). Three-year follow-up was available in 98% of eligible patients. T-TEER was performed using a mean number of 2.0±0.6 devices (Mitra-/TriClip 53%; PASCAL 47%). Post-procedural TR was 1+ in 126 patients (51.6%), 2+ in 101 patients (41.4%) and 3+ in 17 patients (7.0%). Survival rates at one, two and three years were 76%, 68% and 56%. Among patients with procedural success (at least 1° TR reduction), a higher degree in post-procedural TR was associated with a trend towards reduced postinterventional survival (Figure 1). The absolute degree of TR reduction did not impact survival rates in patients with procedural success (Figure 2).

Conclusion: T-TEER effectively reduces TR severity and shows high rates of procedural success. While the extent of TR reduction did not yield prognostic value in terms of long-term survival, the degree of post-procedural TR showed a trend regarding survival outcome. These results indicate that procedural techniques and strategies should be refined to achieve TR1+ at the end of the procedure.

Three-year outcomes following transcatheter tricuspid valve edge-to-edge repair

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