Title: Longitudinal Assessment of Mitral Regurgitation Following TAVR: Echocardiographic and Survival Outcomes at Mid-Term Follow-up

Authors: Hamza A Malick BS, Leshya Bokka MD, Marty J DiPopolo BS, Stergios Gatzoflias MD, Kelly Colongeli PA, Jonathan Price MD, Ahmad Alkhalil MD, Puja B Parikh MD, Henry Tannous MD, Allison McLarty MD, Maroun Yammine MD

Faculty Mentors: Maroun Yammine MD, Allison McLarty MD

Background: Patients with aortic stenosis (AS) and concomitant mitral regurgitation (MR) are often offered isolated transcatheter aortic valve replacement(TAVR). The change in MR after treating AS and its impact on survival remains unclear. We aimed to study the change in MR over time, the predictors of persistent MR and survival following TAVR.

Methods/Research Design: We conducted a retrospective study of 966 patients who underwent TAVR at a single institution from 2017 to 2022. Patients with prior mitral valve intervention were excluded. MR was graded preoperatively, at post-TAVR day 1, 1 month, 1 year, and at latest available follow up. Improvement in MR was defined as ≥1 grade decrease from the pre-TAVR MR grade. Patients were divided into 2 groups: pre-TAVR MR grade ≥2 (moderate or greater) vs <2.

Results: Overall, 8.2% (79/966) of patients had MR ≥2 and 91.8% (887/966) had MR <2. In MR ≥2, mean age was 84.6±8.6 years (vs 79.0±8.5, p<0.001) and 62% (49/79) were female (vs 44% (388/887), p<0.002). Atrial fibrillation (AF) was present in 49.4% (39/79 vs 30.3% (269/887)) and prior CABG in 30.4% (24/79 vs 15.3% (136/887)) (all p<0.001). Left ventricular ejection fraction (LVEF) was 51±13% (vs 59±12%) and the LV end-systolic diameter was 3.7±1.0 cm (vs 3.3±0.8 cm) (all p<0.001). Balloon expandable valves were used in 49% (39/79) in MR ≥2 (vs 70% (620/887), p<0.001). Post-TAVR in-hospital events were not significantly different between the two groups. Mortality at 30 days was 1.3% (1/79 vs 1.0% (9/887), p=0.8) and stroke 1.3% (1/79 vs 0.9% (8/887), p=0.6). In MR ≥2, MR improved in 78% (62/79) at post-TAVR day 1, 82% (61/74) at 1 month, 79% (38/48) at 1 year and 70% (23/33) at latest follow-up. Improvement in MR was similar among functional and restrictive etiologies (p>0.05). Kaplan–Meier analysis showed reduced survival for MR ≥2 (p=0.04) however on adjusted analysis, MR ≥2 was not a predictor of 1-year mortality (p=0.7). The predictors were older age, lower LVEF, hemodialysis, AF and mitral stenosis (all p<0.05). Time-to-event analysis showed MR ≥2 was not associated with mortality (p=0.9) and the predictors of reduced survival were hemodialysis, AF and mitral stenosis (all p<0.05)

Conclusion: In this cohort, patients with moderate or greater MR experienced immediate and sustained improvement in MR following TAVR. Mid-term survival in patients with MR ≥2 seems to be driven by their underlying clinical characteristics rather than the degree of MR