Section B – Abstract 6 – 12:00 Noon

Risk Factors and Outcomes after Concomitant Tricuspid Valve Repair at the Time of Pulmonary Valve Replacement in Patients with Repaired Tetralogy of Fallot

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Introduction: Pulmonary valve replacement (PVR) is the most frequent late reoperation in patients with repaired tetralogy of Fallot (TOF). Progressive right ventricle (RV) dilation due to severe pulmonary insufficiency (PI) can also lead to functional tricuspid valve regurgitation (TR), which can accelerate RV volume load and RV dilation, as well as increase the risk for atrial arrhythmias. Previous studies, have indicated that as many as 13-41% of patients will require TV annuloplasty at the time of PVR. Whether concomitant TV repair improves postoperative outcomes in regards to reduction in RV size and TV function versus PVR alone is unknown. The goal of our study was to evaluate the risk factors and outcomes of patients with ≥ moderate TR who underwent TV repair at the time of PVR and compare them with patients undergoing PVR alone.

Methods: We performed a retrospective cohort study of all patients with corrected TOF that underwent PVR with or without concomitant TV repair at our institution between 1999 and 2012. Degree of TR and RV size was assessed with pre-operative and post-operative echocardiograms. Degree of TR was based on vena contracta diameter in the apical 4-C view. RV volume and ejection fraction were determined using the modified RV Simpson's method during end-systole (RVESV) and end-diastole (RVEDV).

Results: A total of 62 patients (median age 26 yrs [16-66 yrs]) with repaired TOF underwent PVR for severe pulmonary valve regurgitation. There were no perioperative surgical deaths. One year after PVR, all 62 patients showed significant reduction in the degree of TR, and the percentage change in RVEDV and RVESV ($p=<0.001$ for each). Of the 62 patients, 36 (58%) patients had ≥ moderate TR on preoperative echocardiogram, of which 18 underwent concomitant PVR and TV repair and 18 underwent PVR alone. Between the patients who underwent concomitant PVR and TV repair and those who underwent PVR alone, there was no significant difference between age at time of PVR, length of follow-up, preoperative RVEDV, RVESV, RV function, or the presence of arrhythmias. Following surgery, there was no statistical difference at 1 year in post-operative TV insufficiency ($p=0.3$) or the percentage change in RVEDV ($p=1$) or RVESV ($p=1$) between patients that underwent TV repair at the time of PVR versus PVR alone. On 1-year post-operative echocardiogram, the risk of having ≥ moderate TR at follow-up after PVR was not significantly different for those patients that underwent concomitant TV repair (1 of 18, 6%) compared to those that underwent PVR alone (3 of 18, 16%) (p=NS). At last follow-up, the majority of patients in both cohorts had normal RV function, both 82% respectively. At a mean follow up of 3.2 years (1mo-14yr), there was 1 late sudden death in a patient who underwent PVR alone.

Conclusion: TV regurgitation at the time of PVR is a common finding in patients with corrected TOF but does not appear to be associated with RV size or length of follow-up. In patients with moderate or greater tricuspid regurgitation, TV repair at the time of PVR did not improve outcomes at 1 year and resulted in a statistically similar reduction in TR and RV volume reduction when compared to those patients undergoing PVR alone.