

Re-operations For Tricuspid Valve Regurgitation Following Tetralogy Of Fallot Repair

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Background: Significant tricuspid valve regurgitation (TVR) is an occasional finding after repair of Tetralogy of Fallot (ToF) that should be dealt with at the time of reoperation for replacement of a regurgitant pulmonary valve (PVR).

Methods: Single-center retrospective series of patients referred to our practice for re-do PVR after total correction of ToF at a younger age between 2013-2017. Initial ToF correction was performed in another center. We report on the frequency and causes of TVR in this cohort.

Results: 7/82 patients referred for PVR and 1 isolated ToF patient (total 10%) had significant TVR and underwent tricuspid valvuloplasty. Median age at the time of reoperation was 16 (range 10-27) years; median time between initial correction and reoperation was 13 years (range 10-27yrs). The functional class was NYHA class I in 2/8, class II in 4/8 and class III in 2/8. Median TV regurgitant fraction on cardiac MRI prior to surgery was 25% (range 22-33%). Median RV end-diastolic volume and RV ejection fraction were 170ml/m² and 45%, respectively. We noticed two responsible mechanisms for the TR. Dense retraction of the AS commissure with restricted motion of the adjacent anterior and septal leaflet to the AS commissure due to the extension of the fibrotic reaction to the pledgeted sutures used for the VSD closure. The second mechanism was retraction of the AS commissure with rupture of its primary chordae. Annuloplasty ring was placed in 6 patients. Tricuspid valve repair with a septal leaflet sliding plasty and creation of a neo-commissure between the anterior and the septal leaflet was performed in 7 cases. Closure of the AS commissure with a bovine patch performed in one case. Mortality was 0% with no major postoperative complications. One patient had moderate TR/TS.

Conclusion: Iatrogenic regurgitation of the tricuspid valve post-ToF repair due to the placement of pledgeted sutures for the VSD closure is surgically challenging. Fibrotic reaction induced by these sutures is a progressive phenomenon. The extent of the fibrosis to the adjacent leaflets will be a determinant factor for the fate of the TV repair.