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Congenital Cardiology Solutions

PAPILLARY MUSCLE APPROXIMATION TO ADDRESS TRICUSPID TETHERING: EFFICACY AND SAFETY FROM IATROGENIC STENOSIS AN A CASE-CONTROL STUDY

ACC Moderated Poster Contributions

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Background: Acceptable coaptation can't always be obtained using standard techniques in tricuspid valve repair for congenitally tethered leaflets. Papillary muscle repositioning has been proposed to relieve tethering in adult functional mitral regurgitation. We assessed the safety and mid-term results using a novel technique of papillary muscle approximation (RV-PMA) to address tricuspid leaflet tethering in children.

Methods: All tricuspid valve procedures from 2009 to 2011 were included. RV-PMA consisted of suturing the anterior papillary muscle to the ventricular septum, so as to bring the papillary muscle and anterior leaflet closer to the posterior and septal leaflets. This allowed the tethered leaflet to be brought up and rest closer to the natural coaptation plane. Controls were paired 2:1 with the study patients, matched by diagnosis, age and mechanism of tricuspid regurgitation.

Results: Among 152 tricuspid repairs during the study period, 25 patients required RV-PMA. The anatomy in the RV-PMA group was Ebstein's anomaly in 12 patients (as an adjunct to cone repair), pulmonary atresia with intact ventricular septum in 6 patients, tetralogy of Fallot in 2 patients, hypoplastic left heart syndrome in 2, and other tricuspid dysplasia in 2 patients. 50 patients were included in the control group. There were no early deaths or reoperations. At discharge, all but 1 patient in the RV-PMA group had mild or less tricuspid regurgitation, with a mean inflow gradient of 0.7 ± 1.3 mmHg, while 2 controls had moderate regurgitation with a mean gradient of 0.5 ± 1.2 (P=0.65). During a mean follow-up of 13 ± 8 months, there were no deaths and 3 reoperations for re-repair: 1 patient in the study group, due to breakage of the RV-PMA suture early after discharge, and 3 patients in the control group (P=1.00). At latest follow-up, all but 2 patients with RV-PMA (92%) had \leq mild regurgitation with an inflow gradient of 0.6 ± 1.6 mmHg (range 0-7), and all but 2 controls (95%, p = 0.66) had \leq mild regurgitation with an inflow gradient of 1.2 ± 2.7 (P=0.21, range 0-14).

Conclusions: RV-PMA is simple, safe and can improve coaptation with acceptable inflow gradients. Further studies are required to assess RV remodeling from this repair.