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RISK FACTORS FOR LONG TERM-OUTOMES IN BALLOON VALVULOPLASTY FOR AORTIC STENOSIS

ACC Oral Contributions
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Background: Balloon valvuloplasty (BV) is the primary therapy for congenital aortic valve stenosis (AS). Many reports describe short and intermediate outcomes, yet few describe predictors for long-term success.

Methods: We performed a retrospective review of patients who underwent BV for congenital AS at our institution over the past 20 years. The following endpoints were evaluated: moderate to severe aortic insufficiency by echocardiography (AI), aortic valve replacement (AVR), repeat BV, surgical aortic valvotomy, and transplant/death. Regression analysis was performed to identify risk factors for all endpoints.

Results: Between 1985 and 2009, 196 patients undergoing BV between the ages of 1 day to 30 years were followed for 4.45 (±4.85) years. Transplant or death occurred in 10 (5%) patients. Neonates were at greater risk for death or transplant ($p<0.01$). AVR occurred in 31 (16%) patients at a mean of 3.7 (±3.6) years. Lower baseline left ventricular shortening fraction (LVSF) ($p<0.01$) and younger patient age ($p<0.01$) were associated with AVR. AI occurred in 61 (32%) patients at a mean follow-up of 3.4 (±4.3) years. Balloon: annulus ratio >1 ($p=0.02$), lower LVSF ($p<0.01$), and a younger age at the time of BV ($p<0.01$) were associated with AI. Repeat intervention for recurrent stenosis (BV and/or surgical valvotomy) occurred in 25 (12.8%) patients at a mean of 3.7 (±5.4) years. Factors found to increase the rate of reintervention included: higher final valve gradient ($p=0.04$), lower LVSF ($p=0.04$), and additional left sided obstruction ($p<0.01$). At a follow up of 15 years post-BV, 54 (28%) patients had experienced an adverse event (repeat intervention, AVR, death or transplant). At a follow up of 10 years, 46 (23%) patients experienced an adverse event. Neonatal AS ($p=0.04$), lower LVSF ($p<0.01$) and higher final valve gradient ($p<0.01$) were associated with adverse events.

Conclusions: BV confers long-term benefit to most patients with congenital AS. While 25% of patients required additional procedures (repeat BV, surgical aortic valvotomy or AVR) 77% were event free at 10 years. Neonates and patients with lower LVSF experienced worse outcomes.