Rapid right ventricular pacing in balloon aortic valvuloplasty in pediatric patients with congenital aortic stenosis

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Introduction: Balloon aortic valvuloplasty is the better treatment for congenital aortic valve stenosis. The strong cardiac contractions and aortic flow cause rapid balloon movements during inflation and may lead to unsuccessful dilatation and aortic insufficiency. The aim of our study was to evaluate the effect of rapid right ventricular pacing in facilitating balloon stability during dilatation procedure for congenital aortic stenosis.

Methods: Nine patients with congenital aortic stenosis were enrolled and managed with the balloon dilatation under rapid right ventricular pacing. Their ages ranged from 2 to 15 years, mean 9±5.6 years. A pacing catheter was placed in right ventricle before balloon dilatation in all patients. Rapid right ventricular pacing was performed at a rate (up to 220/min) decreasing systolic aortic pressure to the point of half of baseline. Under continuous pacing, the balloon was inflated completely and deflated rapidly. Pacing was stopped after balloon deflation.

Result: The systolic gradients across the aortic valve before procedure ranged from 50 to 163 mmHg, mean 85.8±45.5 mmHg. The post-balloon dilatation gradients ranged from 35 to 138 mmHg, mean 61.6±43.6 mmHg. Balloon stability at time of inflation was accomplished in all patients. Aggravation of aortic insufficiency did not occur to any patient. There was no sustained arrhythmias or other procedure-related complications.

Conclusion: Rapid ventricular pacing is a safe and effective method to provide balloon stability facilitating successful dilatation of congenital aortic stenosis and reducing the risk of complications.