

Cardiac Mechanics in Young Patients After Arterial Switch Operation for d-Transposition of the Great Arteries and Gothic Aortic Arch Morphology

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Background: In patients who have undergone arterial switch operation (ASO), aortic arch has been found to be more acute and associated with abnormal bioelastic properties. Our study aims were to assess in young patients after successful ASO 1- the occurrence of Gothic aortic arch (GA); 2- the association between GA and aortic stiffness; and 3- the impact of GA on left ventricular (LV) function using standard echocardiography and speckle tracking echocardiography (STE).

Methods and Results: We studied eighty consecutive asymptomatic patients, who have undergone first stage ASO for simple d-TGA, with normal left ventricular ejection fraction (LVEF $\geq 53\%$).

Forty-two (52%) patients showed an GA (mean age 10.8 ± 6.6 years, 26 males) while thirty-eight (48%) patients (mean age 9.2 ± 6.1 years, 27 males) did not present GA. There were no significant differences for age, sex, BSA, and blood pressure values between groups. In group GA left atrial volume indexed (Group AAA= 17.8 ± 9.7 vs 13.2 ± 8.4 ml, $p=0.025$) and aortic stiffness index (Group AAA= 2.05 ± 1.2 vs 1.5 ± 0.7 , $p=0.016$) were significantly increased, while basal LV longitudinal strains were significantly reduced.

Conclusions: GA is responsible for significant increase in aortic stiffness, dilated left atrial volume, and impaired LV longitudinal systolic deformation in the basal segments in young patients after ASO.