

MP3-10

Does diastolic dysfunction improve following the Ross procedure?

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Introduction: Aortic valve stenosis causes left ventricular hypertrophy (LVH) and myocardial fibrosis resulting in diastolic dysfunction. Advanced diastolic dysfunction at baseline prior to aortic valve replacement has been associated with increased mortality and morbidity. Reverse LV remodelling and resolution of diastolic dysfunction following aortic valve replacement takes two to six years in adults. Little is known about the reversibility of diastolic dysfunction in children. We sought to determine if diastolic function improves in children with aortic valve disease following the Ross procedure compared to healthy controls. **Methods:** Retrospective study of patients with aortic valve disease following the Ross procedure, healthy controls were also included (n=92). Echocardiograms prior to and at 1 year following the Ross procedure were reviewed. Systolic function was assessed by shortening fraction (SF). LV mass was recorded and indexed to height^{2.7} (LVmassHt). Diastolic measures included: mitral valve velocities (E, A, E/A ratio, E/E'), E wave deceleration time, and TDI E' and A' in the lateral LV (LatLV), IVS, and right ventricular (RV) walls. Medians and interquartile ranges are reported. A Wilcoxon rank sum test was done to compare patients pre vs post Ross procedure, and post Ross procedure vs controls. A p-value of <0.05 was considered statistically significant. **Results:** Forty three patients (31 male) were included with follow up data available on 31 patients. Age at surgery was 9 years (4-14 years). LV SF was normal in patients' pre Ross [38% (34-44%)]. At 1 year, LVmassHt was lower compared to pre Ross values (59 vs 76 gm/ht^{2.7}; p<0.001), however was not normal compared to controls (59 vs 39 gm/ht^{2.7}; p<0.001). There was no change in LV diastolic function between pre and post Ross procedure, and diastolic function was significantly lower in post Ross patients than controls (Table 1). **Conclusions:** Diastolic dysfunction persists in pediatric patients with aortic valve disease at 1 year following the Ross procedure. Follow up over time will determine whether diastolic dysfunction returns to normal.

		Pre Ross	Post Ross	p value ^a	Controls	p value ^b
Mitral inflow velocity	E (m/s)	1.15 (0.90-1.30)	1.10 (0.90-1.3)	NS	0.85 (0.80-1.0)	<0.001
	A (m/s)	0.5 (0.4-0.8)	0.6 (0.5-0.8)	NS	0.4 (0.3-0.5)	<0.001
	E/A ratio	2.0 (1.3-2.9)	1.7 (1.4-2.2)	NS	2.4 (2.0-2.6)	<0.001
	Decel time (ms)	155 (138-180)	171 (148-207)	NS	135 (115-154)	<0.001
	E/E'	7.4 (6.3-10.2)	7.0 (5.7-9.2)	NS	5.3 (4.5-6.4)	0.001
TDI LatLV	E' (cm/s)	13 (12-16)	14 (12-17)	NS	16 (14-18)	0.044
	A' (cm/s)	5 (4-6)	5 (4-6)	NS	6 (5-7)	0.013
TDI IVS	E' (cm/s)	13 (12-16)	14 (12-17)	NS	16 (14-18)	<0.001
	A' (cm/s)	5 (4-6)	5 (4-6)	NS	6 (5-7)	NS
TDI RV	E' (cm/s)	13 (12-16)	14 (12-17)	NS	16 (14-18)	<0.001
	A' (cm/s)	5 (4-6)	5 (4-6)	NS	6 (5-7)	<0.001