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Right versus Left Ventricular Remodelling after Surgical myectomy for HOCM

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Background: Surgical myectomy for (HOCM) results in complex structural and functional changes. "Remodelling" in different cardiac chambers. To date, changes in the Right versus the left Ventricle have not been studied.
Methods: Fourty five patients (mean age = 32±16, 68% males) who underwent extended septal myectomy for LVOTO and Fourty "normal" controls (mean age = 32±12 years, 52% males) were studied by cardiac magnetic resonance imaging (CMR). The patients were studied pre-operatively and 6–18 months post-operatively (median = 9 months). The images were analysed by both commercial and in-house software.
Results: After myectomy. Follow up CMR showed changes in RV mass (21±5 to 23±7) g/m^2, volume (60±15 to 66±12) ml/m^2 and shape using 3 different methods. RV deformation parameters showed significant changes with circumferential strain (–8±2 to –14±4), filling (38±16 to 62±19) ml/s/m^2 and ejection rate (–44±17 to –75±22). Changes in RV were substantially higher than those observed in the LV (Figure. 1, Table. 1). All patients reported significant symptomatic improvement with 31 (78%) patients in NYHA class I and 9 (22%) in class II at follow up. Significant reduction in peak gradient across the LVOT by 75%.
Conclusion: LV septal myectomy is followed by structural and functional remodelling which is more extensive in the right than the left ventricle. The clinical significance of these findings needs further study.

Table 1. Summary of reported parameters related to RV Shape for pre and post operation HOCM patients and Normal Healthy Volunteers

	LV				RV			
	Pre	Post	Normal	P-value	Pre	Post	Normal	P-value
EDV ml/m^2	75±18	81±14	73±10	0.005	60±15	66±12	71±12	0.002
ESV ml/m^2	20±9	24±8	26±6	0.008	16±7	19±9	26±7	0.02
SV ml/m^2	56±13	57±10	51±13	0.38	44±11	48±10	49±14	0.009
EF	74±7	70±7	65±5	0.001	74±8	72±7	64±6	0.228
Mass g/m^2	74±33	62±29	27±8	0.0456	21±5	23±7	18±5	0.2100
PFR ml/m^2	173±48	141±48	141±40	<0.0001	38±16	62±19	55±24	<0.0001
PER ml/m^2	–179±35	–172±42	–144±42	0.29	–44±17	–75±22	–57±22	<0.0001
Peak Strain	–20±3	–20±3	–20±3	0.49	–8±2	–14±4	–12±3	<0.0001

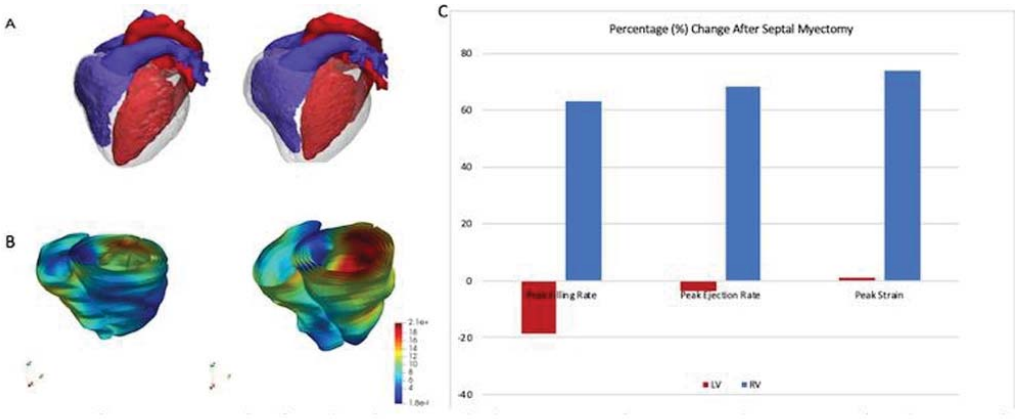

Figure 1. A) 3D Segmented Left and Right Ventricle for patient Left Pre-op, right Post-op. B) Right Ventricle Reconstructed Mesh at peak systole with colour coded displacement field in (mm) Left Pre-op, right Post-op. C) Bar chart illustrating percentage change in mean values for functional parameters of both LV and RV