

Supplementary

Table S1 Mitral valve annular dimensions in controls, primary, and secondary mitral regurgitation after excluding patients with significant TR (>2+ TR)

Variable	Controls (N=50)	SMR (N=18)	PMR (N=49)	ANOVA P value	Post hoc Tukey's test interpretation	Tukey's test P values: SMR vs. controls; PMR vs. controls; PMR vs. SMR; respectively
MVA area (cm ²)	10.4±1.71	13.39±2.97	16.53±3.83	<0.001	PMR > SMR > controls	0.003; <0.001; 0.001
MVA area/BSA (cm ² /m ²)	5.1±0.86	7.42±1.41	8.57±1.75	<0.001	PMR > SMR > controls	<0.001; <0.001; 0.015
MVA perimeter (mm)	116.16±9.93	131.50±13.94	146.51±16.38	<0.001	PMR > SMR > controls	0.001; <0.001; 0.001
MVA peri/BSA (mm/m ²)	57.38±8.18	73.28±7.50	76.39±9.28	<0.001	PMR = SMR > controls	<0.001; <0.001; 0.388
MVA SL distance (mm)	33.68±3.23	39.22±4.41	43.18±6.11	<0.001	PMR > SMR > controls	0.001; <0.001; 0.015
MVA SL distance/BSA (mm/m ²)	16.64±2.61	22.06±2.84	22.45±3.12	<0.001	PMR = SMR > controls	<0.001; <0.001; 0.875
MVA IC distance (mm)	39.20±3.98	42.89±4.65	47.63±5.16	<0.001	PMR > SMR > controls	0.011; <0.001; 0.001
MVA IC distance/BSA (mm/m ²)	19.28±2.65	23.78±2.24	24.88±3.04	<0.001	PMR = SMR > controls	<0.001; <0.001; 0.324
MVA height (mm)	11.69±33.96	12.19±3.34	11.85±2.85	0.617	PMR = SMR = controls	N/A
MVA height/BSA (mm/m ²)	5.78±2.02	6.77±1.74	6.16±1.47	0.249	PMR = SMR = controls	N/A
MVA ratio: IC/SL	1.16±0.11	1.10±0.10	1.11±0.11	0.045	PMR = SMR < controls	0.033; 0.048; 0.670

MVA, mitral valve annulus; IC, intercommissural distance; SL, septo-lateral distance; BSA, body surface area; PMR, primary mitral regurgitation; SMR, secondary mitral regurgitation.

Table S2 Tricuspid valve annular dimensions in controls, primary, and secondary mitral regurgitation after excluding patients with significant TR (>2+TR)

Variable	Controls (N=50)	SMR (N=18)	PMR (N=49)	ANOVA P value	Post hoc Tukey's test	Tukey's test P values: SMR vs. controls; PMR vs. controls; PMR vs. SMR; respectively
TVA area (cm ²)	12.64±2.25	17.11 ±3.63	14.90±3.52	<0.001	SMR > PMR > controls	<0.001; 0.001; 0.005
TVA Area/BSA (cm ² /m ²)	6.27±1.47	9.58±2.12	7.74±1.79	<0.001	SMR > PMR > controls	<0.001; <0.001; <0.001
TVA Perimeter (mm)	130.9 ±11.32	149.33±15.83	140.41±15.63	<0.001	SMR > PMR > controls	<0.001; <0.002; 0.014
TVA Peri/BSA (mm/m ²)	64.99±11.54	83.66±12.25	73.41±10.60	<0.001	SMR > PMR > controls	<0.001; <0.001; 0.003
TVA SI distance (mm)	45.02±5.08	50.17±5.51	47.82±5.54	0.004	SMR > PMR > controls*	<0.001; 0.022; 0.05*
TVA SI distance/BSA (mm/m ²)	22.38±4.46	28.12±4.46	25.08±4.26	0.003	SMR > PMR > controls	<0.001; 0.004; 0.02
TVA AS distance (mm)	36.16±5.5	43.90±4.74	41.00±6.59	<0.001	SMR > PMR > controls*	<0.001; <0.001; 0.09*
TVA AS distance/BSA (mm/m ²)	17.94±3.71	24.34±3.89	21.37±3.44	<0.001	SMR > PMR > controls	<0.001; <0.001; 0.004
TVA height (mm)	7.68±2.44	6.89±2.76	7.26±2.56	0.133	SMR = PMR = controls	N/A
TVA height/BSA (mm/m ²)	3.84±1.48	3.92±1.80	3.83±1.43	0.360	SMR = PMR = controls	N/A
TVA ratio: SI/AS	1.27±0.24	1.16±0.13	1.19±0.17	0.039	SMR = PMR < controls [†]	0.071 [†] ; 0.069 [†] ; 0.902

*, only a trend towards SMR larger than PMR; [†], only a trend towards SMR and PMR < controls TVA, tricuspid valve annulus; SI, supero-inferior distance; AS, antero-septal distance; BSA, body surface area; PMR, primary mitral regurgitation; SMR, secondary mitral regurgitation.

Table S3 Mitral valve annular dimensions in controls, primary, and secondary mitral regurgitation after excluding patients with atrial fibrillation

Variable	Controls (N=50)	SMR (N=12)	PMR (N=39)	ANOVA P value	Post hoc Tukey's test interpretation	Tukey's test P values: SMR vs. controls; PMR vs. controls; PMR vs. SMR; respectively
MVA area (cm ²)	10.4±1.71	11.83±2.21	16.44±3.79	<0.001	PMR > SMR > controls	0.042; <0.001; 0.001
MVA area/BSA (cm ² /m ²)	5.1±0.86	6.58±0.85	8.63±1.72	<0.001	PMR > SMR > controls	0.001; <0.001; 0.013
MVA perimeter (mm)	116.16±9.93	124.00±11.48	146.18±16.27	<0.001	PMR > SMR > controls	0.047; <0.001; 0.001
MVA peri/BSA (mm/m ²)	57.38±8.18	69.42±5.81	77.26±8.97	<0.001	PMR > SMR > controls	<0.001; <0.001; 0.014
MVA SL distance (mm)	33.68±3.23	37.58±3.65	43.23±5.90	<0.001	PMR > SMR > Controls	0.022; <0.001; 0.001
MVA SL distance/BSA (mm/m ²)	16.64±2.61	21.17±2.59	22.80±2.96	<0.001	PMR = SMR > controls	<0.001; <0.001; 0.176
MVA IC distance (mm)	39.20±3.98	40.67±4.08	47.28±5.35	<0.001	PMR > SMR > controls	0.080; <0.001; 0.001
MVA IC distance/BSA (mm/m ²)	19.28±2.65	22.58±1.98	25.03±3.01	<0.001	PMR = SMR > controls	<0.001; <0.001; 0.022
MVA height (mm)	11.69±3.96	11.77±3.90	11.84±2.99	0.981	PMR = SMR = Controls	N/A
MVA height/BSA (mm/m ²)	5.78±2.02	6.61±2.18	6.23±1.55	0.300	PMR = SMR = controls	N/A
MVA ratio: IC/SL	1.16±0.11	1.08±0.09	1.11±0.11	0.006	PMR = SMR < controls	0.046; 0.014; 0.870

MVA, mitral valve annulus; IC, intercommissural distance; SL, septo-lateral distance; BSA, body surface area; PMR, primary mitral regurgitation; SMR, secondary mitral regurgitation.

Table S4 Tricuspid valve annular dimensions in controls, primary, and secondary mitral regurgitation after excluding patients with atrial fibrillation

Variable	Controls (N=50)	SMR (N=12)	PMR (N=39)	ANOVA P value	Post hoc Tukey's test	Tukey's test P values: SMR vs. controls; PMR vs. controls; PMR vs. SMR; respectively
TVA area (cm ²)	12.64±2.25	15.58±3.03	14.97±3.48	<0.001	SMR > PMR > controls	0.005; 0.001; 0.097*
TVA area/BSA (cm ² /m ²)	6.27±1.47	8.74±1.67	7.90±1.81	<0.001	SMR > PMR > Controls	<0.001; <0.001; 0.072*
TVA perimeter (mm)	130.9 ±11.32	142.42±13.87	141.05±14.77	<0.001	SMR > PMR > controls	0.020; 0.001; 0.044
TVA peri/BSA (mm/m ²)	64.99±11.54	80.00±9.89	74.85±10.83	0.001	SMR > PMR > controls	<0.001; <0.001; 0.042
TVA SI distance (mm)	45.02±5.08	48.58±5.01	48.03±5.31	0.011	SMR > PMR > controls*	<0.001; 0.021; 0.05*
TVA SI distance/BSA (mm/m ²)	22.38±4.46	27.31±3.89	25.56±4.34	<0.001	SMR > PMR > controls	<0.001; 0.004; 0.02
TVA AS distance (mm)	36.16±5.5	41.42±3.99	41.05±6.45	<0.001	SMR > PMR > controls*	0.015; <0.001; 0.12*
TVA AS distance/BSA (mm/m ²)	17.94±3.71	23.33±3.38	21.73±3.61	<0.001	SMR > PMR > controls	<0.001; <0.001; 0.272*
TVA height (mm)	7.68±2.44	6.92±2.11	7.51±2.56	0.628	SMR = PMR = controls	N/A
TVA height/BSA (mm/m ²)	3.84±1.48	3.88±1.17	4.04±1.51	0.816	SMR = PMR = controls	N/A
TVA ratio: SI/AS	1.27±0.24	1.18±0.14	1.19±0.18	0.022	SMR = PMR < controls [†]	0.067 [†] ; 0.069 [†] ; 0.989

*, only a trend towards SMR larger than PMR; [†], only a trend towards SMR and PMR < controls TVA, tricuspid valve annulus; SI, superoinferior distance; AS, antero-septal distance; BSA, body surface area; PMR, primary mitral regurgitation; SMR, secondary mitral regurgitation.