

Supplementary Table 1 Characteristics of the matched samples used for strain analysis and mitral valve geometrical measurements

	Population (n=400)	SADMR (n=200)	SMR without SAD (n=200)	<i>p</i>-value
Age, years	68 ± 12.3	68 ± 12.4	68.1 ± 12.4	0.81
Female gender, %	206 (51%)	103 (52%)	103 (52%)	1.00
BMI, Kg/m²	28.5 ± 6.8	28.3 ± 7.9	28.1 ± 6.3	0.78
EROA, mm²	38.8 ± 14.4	39.4 ± 14.1	38.3 ± 14.6	0.56
LVEF, %	33 ± 9.17	33.9 ± 9.1	33.4 ± 9.3	0.66

Supplementary Table 2 Strain analysis and mitral valve anatomic features in a second propensity score matching after adjusting for LVEDV and LVESV

	SMR without SAD (n=89)	SADMR (n=89)	<i>p</i>-value
LA Strain, %	14.1 ± 6.7	8.9 ± 5.3	<0.001
LVGLS, %	-7.9 ± 2.6	-7.1 ± 3.8	0.16
Mitral annular diameter/BSA, cm/m²	1.9 ± 0.3	2.17 ± 0.4	<0.001
Anterior leaflet length/annular diameter	1.72 ± 0.5	0.59 ± 0.1	<0.001
Posterior leaflet length/annular diameter	0.61 (0.56, 0.65)	0.57 (0.52, 0.62)	0.012
Anterior leaflet angle, degrees	34.9 ± 8.9	29.2 ± 9.2	<0.001
Posterior leaflet angle, degrees	34.5 (29.2, 41.9)	30.3 (24.9, 37.4)	0.005
Tenting height, cm	1.28 ± 0.3	1.09 ± 0.3	0.001

Supplementary Table 3 Subgroup analysis of strain and mitral valve anatomic features in patients with atrial fibrillation vs sinus rhythm

	SMR without SAD (n=200)			SADMR (n=200)		
	Atrial fibrillation (n=124)	Sinus rhythm (n=76)	<i>p</i> -value	Atrial fibrillation (n=126)	Sinus rhythm (n=74)	<i>P</i> -value
LA Strain, %	14.3 ± 9.8	14.3 ± 8.7	0.98	8.1 ± 5.4	8.9 ± 5.5	0.38
LVGLS, %	-5.7 (-7.9, -3.9)	-5.6 (-8.1, -3.1)	0.56	-6.1 ± 3.8	-6.4 ± 3.1	0.58
Mitral annular diameter/BSA, cm/m²	1.87 ± 0.3	1.79 ± 0.5	0.24	2.1 (2.0, 2.4)	2.1 (2.0, 2.3)	0.66
Anterior leaflet length/annular diameter	0.66 ± 0.1	0.65 ± 0.1	0.75	0.6 (0.5, 0.6)	0.6 (0.5, 0.6)	0.9
Posterior leaflet length/annular diameter	0.66 ± 0.1	0.65 ± 0.1	0.63	0.6 (0.5, 0.6)	0.6 (0.5, 0.6)	0.85
Anterior leaflet angle, degrees	36.1 (30.2, 41.3)	36.9 (33.1, 41.2)	0.74	29.7 ± 8.7	28.8 ± 8.1	0.49
Posterior leaflet angle, degrees	41.9 (35, 47.3)	40.8 (35.9, 47.7)	0.99		30.4 ± 8.4	0.79
Tenting height. cm	1.58 ± 0.3	1.57 ± 0.4	0.82	1.17 ± 0.3	1.14 ± 0.3	0.62

Supplementary Table 4 Subgroup analysis of strain and mitral valve anatomic features in patients with ejection fraction <or ≥40%.

	SMR without SAD (n=200)			SADMR (n=200)		
	EF <40% (n=)	EF ≥40% (n=)	<i>p</i> -value	EF <40% (n=)	EF ≥40% (n=)	<i>P</i> -value
LA Strain, %	13.3 ± 9.4	17.1 ± 8.8	0.04	8.5 ± 5.4	7.9 ± 5.5	0.56
LVGLS, %	-5.2 (-7.3, -3.6)	-7.7 (-9.5, -3.9)	0.01	-5.6 ± 2.7	-8.2 ± 4.7	<0.001
Mitral annular diameter/BSA, cm/m²	1.85 ± 0.4	1.81 ± 0.3	0.61	2.1 (1.9, 2.3)	2.2 (2.0, 2.5)	0.13
Anterior leaflet length/annular diameter	0.66 ± 0.1	0.67 ± 0.1	0.83	0.58 (0.5, 0.6)	0.56 (0.5, 0.6)	0.51
Posterior leaflet length/annular diameter	0.66 ± 0.1	0.67 ± 0.1	0.79	0.58 (0.5, 0.6)	0.54 (0.5, 0.6)	0.16
Anterior leaflet angle, degrees	41.3 (36.3, 46.1)	41.1 (36.3, 46.2)	0.73	30.5 ± 8.3	25.9 ± 8.1	0.004
Posterior leaflet angle, degrees	41.3 (35.2, 46.8)	41.1 (36.9, 48)	0.76	31.6 ± 8.3	27.9 ± 8.6	0.02
Tenting height. cm	1.59 ± 0.4	1.57 ± 0.3	0.77	1.2 ± 0.3	1.04 ± 0.3	0.01

Supplementary Table 5 Subgroup analysis of strain and mitral valve anatomic features in patients with ischemic vs non-ischemic cardiomyopathy

	SMR without SAD (n=200)			SADMR (n=200)		
	Non-ischemic (n=71)	Ischemic (n=129)	<i>p</i> -value	Non-ischemic (n=94)	Ischemic (n=106)	<i>P</i> -value
LA Strain, %	15.2 ± 9.4	13.9 ± 9.4	0.45	8.0 ± 5.0	8.6 ± 5.7	0.49
LVGLS, %	-5.9 (-8.8, -3.9)	-5.6 (-7.5, -3.6)	0.27	-5.8 ± 3.1	-6.6 ± 3.8	0.17
Mitral annular diameter/BSA, cm/m²	1.9 ± 0.3	1.8 ± 0.4	0.14	2.15 (1.95, 2.43)	2.14 (1.96, 2.32)	0.63
Anterior leaflet length/annular diameter	0.67 ± 0.1	0.66 ± 0.1	0.71	0.57 (0.5, 0.6)	0.58 (0.5, 0.6)	0.07
Posterior leaflet length/annular diameter	0.67 ± 0.1	0.64 ± 0.1	0.14	0.57 (0.5, 0.6)	0.57 (0.5, 0.6)	0.45
Anterior leaflet angle, degrees	42.3 (37.4, 48.2)	40.4 (36.2, 44.5)	0.09	0.56 ± 0.1	0.59 ± 0.1	0.07
Posterior leaflet angle, degrees	41.1 (34.7, 47.8)	41.3 (36.3, 47.3)	0.99	0.58 ± 0.1	0.57 ± 0.1	0.45
Tenting height, cm	1.62 ± 0.4	1.56 ± 0.3	0.35	1.15 ± 0.3	1.16 ± 0.4	0.92

Supplementary Table 6 Type of SMR and mitral anatomic features according to the presence of significant (>2+) residual MR following transcatheter edge to edge repair

Variable	Total population (n=43)	No significant residual MR (n=37)	Significant residual MR (n=6)	<i>p</i> -value
SADMR	32 (74%)	27 (73%)	5 (83%)	0.59
Anterior leaflet angle, degrees	27.1 (21.5, 34.8)	27.1 (21.9, 34.9)	24.3 (18.4, 30.9)	0.67
Posterior leaflet angle, degrees	27.3 (22, 36.7)	27.3 (22.4, 36.8)	25.9 (20.4, 31.6)	0.96
Tenting height, cm	1.2 (1, 1.4)	1.2 (0.96, 1.39)	1.1 (0.92, 1.26)	0.43