

SUPPLEMENTARY DATA

Table 1 of the supplementary data. Procedural details and periprocedural course

	Total cohort (n = 410)
Presentation	
<i>Systolic blood pressure < 90 mmHg</i>	4 (1.0)
<i>Acute decompensated heart failure</i>	37 (9.0)
<i>Cardiogenic shock or hemodynamic support</i>	13 (3.2)
General procedural aspects	
<i>Urgent procedure</i>	45 (11.0)
<i>Total duration, min</i>	110 [91-143]
<i>Fluoroscopy duration, min</i>	19 [13-26]
<i>Concomitant atrial septal defect closure</i>	14 (3.4)
<i>Immediate complications</i>	
Leaflet injury	1 (0.2)
Access site bleeding	3 (0.7)
Thromboembolism	1 (0.2)
Conversion to surgery	1 (0.2)
Device parameters	
<i>Clips deployed</i>	
0 (aborted/not deployed)	9 (2.2)
1	185 (45.1)
2	167 (40.7)
≥ 3	49 (12.0)
Median	2 (1-2)
<i>Device generation</i>	
1st	153 (37.3)
2nd	129 (31.5)
3rd	86 (21.0)
4th	42 (10.2)
<i>Clip site</i>	
A2P2	379 (92.4)
Non-A2P2	48 (11.7)
Postprocedural effects	
<i>Echocardiography</i>	
Mitral regurgitation severity up-to-mild	
Immediately after clip deployment	317 (77.3)
At discharge	328 (80.0)
At 1 mo	199 (63.4)
Data availability among patients remaining alive	314/405 (77.5)
Transmitral mean pressure gradient, mmHg	
Immediately after clip deployment	3 [2-4]
At 1 mo	4 [3-5]
Pulmonary venous flow pattern	
Improvement on either side	300 (85.5)

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Normalization on either side	264 (72.3)
<i>Right heart catheterization</i>	
Change in V wave, mmHg	-8 [-19-(-2)]
P-value for pre vs post clip deployment	< .001
Change in mean left atrial pressure (mmHg)	-2 [-8-1]
P-value for pre vs post clip deployment	< .001
<i>Change in mean pulmonary arterial pressure, mmHg</i>	-2 [-6-3]
P-value for pre vs post clip deployment	.013
Periprocedural course	
<i>Hospitalization length, d</i>	1 [1-2]
<i>Discharge home</i>	382 (93.6)
Medications at 1 mo	
<i>Beta-blockers</i>	197 (58.3)
<i>Renin angiotensin system inhibitors</i>	165 (49.1)
<i>Mineralocorticoid receptor antagonists</i>	36 (10.7)
<i>Loop diuretics</i>	215 (63.6)
<i>Antiarrhythmics</i>	61 (18.2)
<i>Antiplatelets</i>	229 (67.8)
<i>Oral anticoagulants</i>	156 (46.0)

Data are presented as No. (%) or median [interquartile range].

Table 2 of the supplementary data. Nonmitral valve echocardiographic results

	At 1-month	At 1 year
Left heart		
<i>Left ventricular ejection fraction</i>		
Median, %	58 [50-63]	58 [53-65]
Change from baseline, %	-4 [-10-1]	-4 [-11-3]
P-value vs baseline	< .001	< .001
<i>Left ventricular end-systolic diameter</i>		
Median, cm	3.2 [2.8-3.8]	3.1 [2.7-3.6]
Change from baseline, cm	0.0 [-0.4-0.4]	-0.2 [-0.4-0.2]
P-value vs baseline	.584	.022
<i>Left ventricular end-systolic diameter index</i>		
Median, cm/m ²	1.8 [1.6-2.1]	1.8 [1.5-2.0]
Change from baseline		
Absolute, cm/m ²	0.0 [-0.2-0.2]	-0.1 [-0.3-0.1]
Relative, %	0.9 [-10.6-12.8]	-4.3 [-12.5-6.9]
Reduced	142 (45.4)	103 (57.5)
P-value vs baseline	.684	.021
<i>Left ventricular end-diastolic diameter</i>		
Median, cm	4.7 [4.2-5.3]	4.7 [4.2-5.2]
Change from baseline, cm	-0.2 [-0.6-0.2]	-0.3 [-0.8-0.1]
P-value vs baseline	< .001	< .001
<i>Left ventricular end-systolic volume</i>		
Median, mL	35.0 [23.0-52.3]	31.5 [21.0-44.0]
Change from baseline, mL	1.0 [-9.0-12.0]	-1.6 [-12.8-8.9]
P-value vs baseline	.185	.243
<i>Left ventricular end-diastolic volume</i>		
Median, mL	83.0 [59.8-110.3]	79.0 [57.5-97.0]
Change from baseline, mL	-11.0 [-30.0-9.3]	-11.0 [-30.0-9.3]
P-value vs baseline	< .001	< .001
<i>Left ventricular end-diastolic volume index</i>		
Median, mL/m ²	46.1 (34.3-61.4)	43.5 (34.1-54.4)
Change from baseline		
Absolute, mL/m ²	-6.3 [-16.9-5.7]	-7.8 [-22.6-7.3]
Relative, %	-12.2 [-29.5-11.4]	-17.1 [-36.8-18.0]
Reduced	187 (62.8)	99 (61.9)
P-value vs baseline	< .001	< .001
<i>Left atrial volume index</i>		
Median, mL/m ²	52.0 [40.4-72.0]	53.0 [37.0-71.8]
Change from baseline, mL/m ²	-6.4 [-20.0-6.9]	-6.9 [-21.2-8.3]
P-value vs baseline	< .001	.004
Right heart		
<i>Right ventricular dysfunction</i>		
Any	71 (21.1)	38 (21.2)

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Moderate/severe	34 (10.1)	12 (6.7)
<i>Basal right ventricular diameter at end-diastole</i>		
Median, cm	4.0 [3.5-4.6]	3.9 [3.3-4.4]
Change from baseline, cm	0.2 [-0.3-0.4]	0 [-0.6-0.5]
<i>P-value vs baseline</i>	.057	.642
<i>Above-moderate tricuspid regurgitation</i>	31 (10.1)	16 (8.8)
Right ventricular-pulmonary arterial coupling		
<i>TAPSE</i>		
Median, mm	18 [16-22]	18 [15-21]
Change from baseline, mm	2 [-3-4]	-1 [-4-2]
<i>P-value vs baseline</i>	.526	.071
<i>PASP</i>		
Median, mmHg	37 [30-48]	35 [27-47]
Change from baseline, mmHg	-5 [-16-3]	-7 [-19-2]
<i>P-value vs baseline</i>	< .001	< .001
<i>TAPSE/PASP</i>		
Median, mm/mmHg	0.52 [0.37-0.68]	0.50 [0.37-0.70]
Change from baseline, mm/mmHg	0.09 [-0.05-0.19]	0.03 [-0.09-0.21]
<i>P-value vs baseline</i>	< .001	.029

PASP, pulmonary arterial systolic pressure; TAPSE, tricuspid annular plane systolic excursion.

Data are presented as No (%) or median [interquartile range].

Table 3 of the supplementary data. Univariable echocardiography-only cox proportional hazard model for the composite outcome of all-cause mortality or heart failure hospitalizations at 1 year

	HR (95%CI)	P
Mitral valve-related baseline echocardiographic parameters		
<i>Severe mitral regurgitation</i>	1.72 (0.95-3.12)	.076
Mitral effective regurgitant orifice area by PISA		
Continuous	9.17 (1.65-12.63)	.011
≥ 0.40 cm ² , median	1.30 (0.75-2.26)	.355
≥ 0.52 cm ² , 4th quartile	2.73 (1.16-6.40)	.021
Mitral regurgitant volume by PISA		
Continuous	1.01 (0.99-1.02)	.086
≥ 55.3 mL, median	1.05 (0.58-1.90)	.872
≥ 60.0 mL	1.29 (0.71-2.38)	.405
≥ 77.2 mL, 4th quartile	2.36 (1.00-5.59)	.051
Transmitral mean pressure gradient		
Continuous	1.08 (0.91-1.28)	.395
≥ 3 mmHg, median	1.41 (0.84-2.36)	.194
≥ 4 mmHg, 4th quartile	1.15 (0.67-1.97)	.605
≥ 5 mmHg	1.51 (0.68-3.32)	.309
E wave peak velocity		
Continuous	1.00 (0.99-1.01)	.538
≥ 127 cm/sec, median	1.34 (0.77-2.33)	.295
≥ 150 cm/sec, 4th quartile	1.20 (0.62-2.33)	.594
Mitral annular calcification		
Any	1.53 (0.92-2.53)	.099
Above-mild	1.47 (0.77-2.82)	.247
<i>Mitral leaflet calcification</i>	1.30 (0.76-2.25)	.341
<i>Mitral annular diameter at mid-diastole</i>		
Anterior-posterior		
Continuous	1.32 (0.80-2.16)	.274
≥ 28.9 mm, median	1.44 (0.84-2.47)	.185
≥ 32.7 mm, 4th quartile	1.19 (0.63-2.26)	.594
Anterior-posterior, index		
Continuous	1.07 (0.51-2.25)	.848
≥ 16.0 mm, median	1.04 (0.61-1.77)	.899
≥ 18.6 mm, 4th quartile	1.32 (0.74-2.35)	.342
Medial-lateral		
Continuous	1.82 (1.11-2.99)	.018
≥ 32.2 mm, median	2.24 (1.25-3.99)	.006
≥ 36.0 mm, 4th quartile	1.99 (0.94-4.22)	.074
Medial-lateral, index		
Continuous	1.35 (0.62-2.92)	.446

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≥ 17.8 mm, median	1.14 (0.66-1.97)	.636
≥ 20.2 mm, 4th quartile	1.24 (0.64-2.42)	.520
<i>Mitral leaflet tethering or restriction</i>	1.33 (0.48-3.66)	.583
Nonmitral valve-related baseline echocardiographic parameters		
<i>Left ventricular ejection fraction</i>		
Continuous	0.98 (0.96-0.99)	.015
≤ 63%, median	1.41 (0.84-2.37)	.193
≤ 60%, guideline criterion	1.46 (0.88-2.41)	.141
≤ 56%, 1st quartile	1.88 (1.13-3.14)	.011
<i>Left ventricular end-systolic diameter</i>		
Continuous	1.03 (0.75-1.40)	.860
≥ 3.2 cm, median	1.15 (0.69-1.89)	.593
≥ 3.8 cm, 4th quartile	1.37 (0.80-2.33)	.253
≥ 4.0 cm, guideline criterion	1.19 (0.65-2.15)	.576
<i>Left ventricular ejection fraction ≤ 60% or Left ventricular end-systolic diameter ≥ 4.0 cm</i>	1.28 (0.78-2.12)	.332
<i>Left ventricular end-systolic diameter index</i>		
Continuous	1.58 (0.90-2.75)	.108
≥ 1.8 cm/m ² , median	1.06 (0.64-1.76)	.813
≥ 2.1 cm/m ² , 4th quartile	1.81 (1.07-3.05)	.026
<i>Left ventricular end-diastolic diameter</i>		
Continuous	1.32 (0.98-1.80)	.072
≥ 5.0 cm, median	1.33 (0.80-2.20)	.274
≥ 5.5 cm, 4th quartile	1.22 (0.68-2.18)	.507
<i>Left ventricular end-diastolic diameter index</i>		
Continuous	1.03 (0.62-1.69)	.915
≥ 2.8 cm/m ² , median	1.09 (0.66-1.81)	.726
≥ 3.1 cm/m ² , 4th quartile	1.03 (0.57-1.84)	.930
<i>Left ventricular end-systolic volume</i>		
Continuous	1.01 (0.99-1.02)	.079
≥ 33.0 mL, median	1.14 (0.69-1.88)	.617
≥ 48.3 mL, 4th quartile	1.39 (0.80-2.41)	.243
<i>Left ventricular end-systolic volume index</i>		
Continuous	1.20 (1.06-1.40)	.030
≥ 18.5 mL/m ² , median	1.53 (0.92-2.56)	.103
≥ 25.8 mL/m ² , 4th quartile	1.48 (0.88-2.55)	.157
<i>Left ventricular end-diastolic volume</i>		
Continuous	1.01 (0.99-1.06)	.860
≥ 92.0 mL, median	1.06 (0.64-1.77)	.811
≥ 120.0 mL, 4th quartile	1.07 (0.60-1.90)	.814
<i>Left ventricular end-diastolic volume index</i>		
Continuous	1.03 (0.99-1.20)	.583
≥ 50.7 mL/m ² , median	1.02 (0.61-1.69)	.955
≥ 64.7 mL/m ² , 4th quartile	1.29 (0.74-2.24)	.369
<i>Left ventricular mass index, ASE formula</i>		

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Continuous	1.00 (0.99-1.01)	.257
≥ 117.2 g/m ² , median	1.65 (0.89-2.76)	.158
<i>Left atrial volume index</i>		
Continuous	1.03 (0.99-1.01)	.523
≥ 60 mL/m ² , guideline criterion and median	1.14 (0.68-1.90)	.618
≥ 76 mL/m ² , 4th quartile	1.06 (0.59-1.91)	.842
<i>Moderate or greater aortic stenosis/regurgitation</i>	1.24 (0.53-2.87)	.622
<i>Right ventricular dysfunction</i>		
Any	1.23 (0.69-2.17)	.487
Moderate/severe	1.01 (0.43-2.36)	.980
<i>Basal right ventricular diameter at end-diastole</i>		
Continuous	1.04 (0.73-1.48)	.829
≥ 4.0 cm, median	1.07 (0.65-1.78)	.783
≥ 4.4 cm, 4th quartile	1.30 (0.75-2.24)	.348
<i>Above-moderate tricuspid regurgitation</i>	1.21 (0.66-2.24)	.539
<i>TAPSE</i>		
Continuous	0.53 (0.28-0.99)	.046
≤ 18 mm, median	2.15 (1.06-4.38)	.034
≤ 15 mm, 1st quartile	1.16 (0.57-2.37)	.675
<i>PASP</i>		
Continuous	1.05 (0.99-1.18)	.480
> 43 mmHg, median	1.12 (0.68-1.85)	.665
> 50 mmHg, guideline criterion	1.09 (0.65-1.84)	.733
> 57 mmHg, 4th quartile	1.26 (0.72-2.21)	.412
>70 mmHg	1.12 (0.48-2.60)	.797
<i>TAPSE/PASP, continuous</i>		
Continuous	0.29 (0.07-1.24)	.095
≤ 0.41 mm/mmHg, median	1.79 (0.92-3.50)	.088
≤ 0.29 mm/mmHg, 1st quartile	1.74 (0.87-3.48)	.117
Speckle-tracking		
<i>Left ventricular global longitudinal strain</i>		
Continuous, less negative	1.07 (1.04-1.15)	.038
Less negative than -15.9%, median	1.16 (0.64-2.12)	.622
Less negative than -12.3%, 4th quartile	2.15 (1.17-3.97)	.014

95%CI, 95% confidence interval; ASE, American Society of Echocardiography; HR, hazard ratio; PASP, pulmonary arterial systolic pressure; PISA, proximal isovelocity surface area; TAPSE, tricuspid annular plane systolic excursion.

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Table 4 of the supplementary data. Univariable echocardiography-only Cox proportional hazard model for the separate outcomes of all-cause mortality and heart failure hospitalizations at 1 year

	All-cause mortality		Heart failure hospitalizations	
	HR (95%CI)	P	HR (95%CI)	P
Mitral valve-related baseline echocardiographic parameters				
<i>Severe mitral regurgitation</i>	2.34 (1.12-4.86)	.023	1.60 (0.73-3.49)	.242
Mitral effective regurgitant orifice area by PISA				
Continuous	7.02 (2.28-13.33)	.009	4.74 (0.59-8.46)	.145
≥ 0.40 cm ² , median	1.61 (0.78-3.32)	.195	1.11 (0.54-2.31)	.774
≥ 0.52 cm ² , 4th quartile	3.27 (0.99-10.78)	.052	2.32 (0.81-6.66)	.119
Mitral regurgitant volume by PISA				
Continuous	1.02 (1.00-1.03)	.066	1.01 (0.99-1.02)	.381
≥ 55.3 mL, median	1.65 (0.77-3.53)	.194	1.34 (0.59-3.01)	.482
≥ 60.0 mL	2.06 (0.91-4.68)	.084	1.23 (0.55-2.74)	.610
≥ 77.2 mL, 4th quartile	2.20 (0.76-6.34)	.145	2.59 (0.77-8.69)	.123
Transmitral mean pressure gradient				
Continuous	1.05 (0.84-1.32)	.655	1.18 (0.93-1.49)	.181
≥ 3 mmHg, median	1.60 (0.82-3.13)	.172	1.53 (0.79-2.96)	.210
≥ 4 mmHg, 4th quartile	1.10 (0.54-2.22)	.795	1.20 (0.60-2.37)	.610
≥ 5 mmHg	1.18 (0.46-3.04)	.738	2.20 (0.67-7.18)	.192
E wave peak velocity				
Continuous	1.01 (1.00-1.02)	.307	1.00 (0.99-1.01)	.719
≥ 127 cm/sec, median	2.20 (1.04-4.64)	.039	1.05 (0.52-2.13)	.887
≥ 150 cm/sec, 4th quartile	1.75 (0.68-4.56)	.248	1.08 (0.48-2.41)	.855
<i>Mitral annular calcification</i>				
Any	1.34 (0.69-2.61)	.395	1.89 (0.99-3.60)	.054
Above-mild	1.33 (0.55-3.20)	.528	2.13 (1.01-4.52)	.048
<i>Mitral leaflet calcification</i>	1.41 (0.70-2.84)	.332	1.61 (0.81-3.19)	.176
<i>Mitral annular diameter at mid-diastole</i>				
Anterior-posterior				
Continuous	1.43 (0.75-2.72)	.276	1.28 (0.67-2.42)	.453
≥ 28.9 mm, median	1.64 (-.82-3.29)	.166	1.55 (0.77-3.14)	.222
≥ 32.7 mm, 4th quartile	1.03 (0.47-2.29)	.936	1.47 (0.61-3.57)	.394
Anterior-posterior, index				
Continuous	1.14 (0.45-2.91)	.787	1.08 (0.42-2.81)	0.874
≥ 16.0 mm, median	1.04 (0.53-2.06)	.905	1.18 (0.59-2.36)	.646
≥ 18.6 mm, 4th quartile	1.21 (0.58-2.54)	.619	1.51 (0.73-3.12)	.271
Medial-lateral				
Continuous	1.73 (0.91-3.30)	.096	1.97 (1.04-3.73)	.037
≥ 32.2 mm, median	1.64 (0.80-3.39)	.178	2.75 (1.27-5.94)	.010
≥ 36.0 mm, 4th quartile	1.20 (0.52-2.78)	.673	2.50 (0.88-7.13)	.087
Medial-lateral, index				

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Continuous	1.18 (0.44-3.21)	.738	1.45 (0.54-3.89)	0.461
≥ 17.8 mm, median	1.04 (0.51-2.10)	.917	1.11 (0.55-2.22)	.773
≥ 20.2 mm, 4th quartile	1.07 (0.48-2.39)	.870	1.44 (0.59-3.49)	.423
Mitral leaflet tethering or restriction	2.05 (0.28-14.94)	.481	2.29 (0.81-6.47)	.117
Nonmitral valve-related baseline echocardiographic parameters				
<i>Left ventricular ejection fraction</i>				
Continuous	0.97 (0.95-0.99)	.024	0.98 (0.95-0.99)	.034
≤ 63%, median	1.42 (0.71-2.82)	.318	1.77 (0.89-3.53)	.103
≤ 60%, guideline criterion	1.37 (0.71-2.65)	.354	1.93 (1.03-3.73)	.049
≤ 56%, 1st quartile	2.25 (1.16-4.37)	.017	2.05 (1.07-3.93)	.031
<i>Left ventricular end-systolic diameter</i>				
Continuous	1.24 (0.84-1.82)	.272	1.03 (0.69-1.53)	.892
≥ 3.2 cm, median	1.14 (0.58-2.23)	.698	1.01 (0.53-1.92)	.984
≥ 3.8 cm, 4th quartile	2.13 (1.09-4.16)	.027	1.18 (0.59-2.40)	.638
≥ 4.0 cm, guideline criterion	1.84 (0.90-3.76)	.094	1.07 (0.47-2.44)	.866
<i>Left ventricular end-systolic diameter index</i>				
Continuous	2.35 (1.17-4.71)	.016	1.58 (0.78-3.22)	.204
≥ 1.8 cm/m ² , median	1.22 (0.63-2.37)	.563	1.21 (0.63-2.30)	.568
≥ 2.1 cm/m ² , 4th quartile	2.67 (1.37-5.19)	.004	1.95 (1.02-3.79)	.049
<i>Left ventricular end-diastolic diameter</i>				
Continuous	1.21 (0.80-1.81)	.365	1.32 (0.89-1.96)	.161
≥ 5.0 cm, median	1.09 (0.56-2.12)	.794	1.23 (0.65-2.35)	.527
≥ 5.5 cm, 4th quartile	1.13 (0.53-2.42)	.749	1.07 (0.53-2.17)	.849
<i>Left ventricular end-diastolic diameter index</i>				
Continuous	1.24 (0.65-2.37)	.518	1.04 (0.55-1.97)	.915
≥ 2.8 cm/m ² , median	1.24 (0.64-2.42)	.521	1.01 (0.53-1.92)	.987
≥ 3.1 cm/m ² , 4th quartile	1.28 (0.61-2.66)	.515	1.01 (0.48-2.15)	.974
<i>Left ventricular end-systolic volume</i>				
Continuous	1.11 (1.01-1.22)	.031	1.01 (0.99-1.02)	.113
≥ 33.0 mL, median	1.46 (0.74-2.87)	.276	1.26 (0.66-2.41)	.490
≥ 48.3 mL, 4th quartile	1.67 (0.83-3.36)	.149	1.61 (0.81-3.23)	.177
<i>Left ventricular end-systolic volume index</i>				
Continuous	1.03 (1.01-1.05)	.003	1.03 (1.01-1.05)	.019
≥ 18.5 mL/m ² , median	2.10 (1.04-4.22)	.038	1.71 (0.87-3.33)	.119
≥ 25.8 mL/m ² , 4th quartile	1.63 (0.81-3.27)	.172	1.80 (0.91-3.55)	.091
<i>Left ventricular end-diastolic volume</i>				
Continuous	1.03 (0.99-1.10)	.465	1.00 (0.99-1.01)	.955
≥ 92.0 mL, median	1.09 (0.56-2.11)	.809	1.00 (0.52-1.93)	.997
≥ 120.0 mL, 4th quartile	1.58 (0.79-3.17)	.200	1.02 (0.48-2.17)	.956
<i>Left ventricular end-diastolic volume index</i>				
Continuous	1.01 (0.99-1.03)	.125	1.01 (0.99-1.02)	.451
≥ 50.7 mL/m ² , median	1.18 (0.61-2.28)	.634	1.08 (0.56-2.07)	.822
≥ 64.7 mL/m ² , 4th quartile	1.56 (0.77-3.13)	.215	1.32 (0.65-2.69)	.441
<i>Left ventricular mass index, ASE formula</i>				

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Continuous	1.00 (0.99-1.01)	.738	1.00 (0.99-1.01)	.508
≥ 117.2 g/m ² , median	1.45 (0.74-2.83)	.276	1.37 (0.71-2.65)	.345
<i>Left atrial volume index</i>				
Continuous	1.09 (1.01-1.18)	.031	1.00 (0.99-1.02)	.553
≥ 60 mL/m ² , guideline criterion and median	1.49 (0.76-2.91)	.246	1.16 (0.60-2.26)	.655
≥ 76 mL/m ² , 4th quartile	1.69 (0.84-3.42)	.143	1.11 (0.50-2.43)	.803
<i>Moderate or greater aortic stenosis/regurgitation</i>	1.02 (0.31-3.32)	.978	1.37 (0.49-3.87)	.552
<i>Right ventricular dysfunction</i>				
Any	1.23 (0.58-2.60)	.584	1.14 (0.55-2.39)	.727
Moderate/severe	1.19 (0.36-3.89)	.779	1.24 (0.38-4.04)	.726
<i>Basal right ventricular diameter at end-diastole</i>				
Continuous	1.09 (0.69-1.75)	.704	1.19 (0.76-1.87)	.443
≥ 4.0 cm, median	1.07 (0.55-2.08)	.842	1.40 (0.72-2.72)	.316
≥ 4.4 cm, 4th quartile	1.09 (0.53-2.28)	.811	1.40 (0.70-2.79)	.346
<i>Above-moderate tricuspid regurgitation</i>	1.09 (0.48-2.50)	.839	1.23 (0.56-2.70)	.599
<i>TAPSE</i>				
Continuous	0.61 (0.27-1.38)	.236	0.58 (0.26-1.28)	.179
≤ 18 mm, median	1.72 (0.69-4.31)	.249	2.01 (0.82-4.94)	.127
≤ 15 mm, 1st quartile	1.08 (0.39-2.97)	.881	1.07 (0.42-2.73)	.890
<i>PASP</i>				
Continuous	1.01 (0.99-1.02)	.481	1.00 (0.99-1.02)	.708
> 43 mmHg, median	1.05 (0.54-2.03)	.897	1.20 (0.63-2.28)	.587
> 50 mmHg, guideline criterion	1.12 (0.57-2.23)	.741	1.22 (0.62-2.39)	.566
> 57 mmHg, 4th quartile	1.10 (0.52-2.35)	.801	1.22 (0.59-2.51)	.599
<i>TAPSE/PASP ,continuous</i>				
Continuous	0.41 (0.07-2.61)	.348	0.35 (0.06-2.12)	.252
≤ 0.41 mm/mmHg, median	1.67 (0.68-4.09)	.260	1.65 (0.71-3.86)	.249
≤ 0.29 mm/mmHg, 1st quartile	1.10 (0.40-3.04)	.847	1.61 (0.66-3.95)	.297
Speckle-tracking				
<i>Left ventricular global longitudinal strain</i>				
Continuous, less negative	1.10 (1.01-1.20)	.026	1.08 (0.99-1.17)	.100
Less negative than -15.9%, median	1.25 (0.58-2.67)	.568	1.62 (0.73-3.56)	.235
Less negative than -12.3%, 4th quartile	3.01 (1.41-6.40)	.004	2.04 (0.93-4.50)	.077

95%CI , 95% confidence interval; ASE, American Society of Echocardiography; HR, hazard ratio; PASP, pulmonary arterial systolic pressure; PISA, proximal isovelocity surface area; TAPSE, tricuspid annular plane systolic excursion.

Table 5 of the supplementary data. Multivariable echocardiography-only cox proportional hazard model for the separate outcomes of all-cause mortality and heart failure hospitalizations at 1 year

	All-cause mortality				Heart failure hospitalizations			
	Speckle-tracking not included		Speckle-tracking included		Speckle-tracking not included		Speckle-tracking included	
	HR (95%CI)	P	HR (95%CI)	P	HR (95%CI)	P	HR (95%CI)	P
<i>Mitral valve-related baseline echocardiographic parameters</i>								
Mitral effective regurgitant orifice area by PISA, continuous	2.98 (0.77-3.42)	.075	4.61 (0.22-6.42)	.323	NA	NA	NA	NA
E wave peak velocity ≥ 127 cm/sec, median	1.98 (0.54-4.23)	.260	2.58 (0.93-5.21)	.070	NA	NA	NA	NA
Above-mild mitral annular calcification	NA	NA	NA	NA	1.76 (0.75-4.16)	.195	2.21 (0.90-5.43)	.085
Medial-lateral mitral annular diameter at mid-diastole								
Continuous	2.05 (0.92-4.55)	.077	2.24 (0.92-5.46)	.077	NA	NA	NA	NA
≥ 32.2 mm, median	NA	NA	NA	NA	3.02 (1.37-6.69)	.006	4.29 (1.55-6.90)	.005
<i>Nonmitral valve-related baseline echocardiographic parameters</i>								
Left ventricular ejection fraction ≤ 56%, 1st quartile	2.50 (0.99-6.00)	.065	1.99 (0.66-5.95)	.221	1.89 (0.91-3.93)	.090	1.32 (0.51-3.41)	.571
Left ventricular end-systolic diameter index ≥ 2.1 cm/m ² , 4th quartile*	2.07 (1.10-4.78)	.027	2.17 (1.28-4.88)	.020	2.61 (1.24-5.49)	.012	3.27 (1.38-5.75)	.007
Left atrial volume index, continuous	1.02 (1.01-1.03)	< .001	1.02 (1.01-1.04)	.012	NA	NA	NA	NA
<i>Speckle-tracking</i>								
Left ventricular global longitudinal strain less negative than -12.3%, 4th quartile	NA	NA	1.66 (0.62-4.50)	.315	NA	NA	1.55 (0.61-3.95)	.355

95%CI, 95% confidence interval; HR, hazard ratio; NA, not applicable; PISA, proximal isovelocity surface area.

* Left ventricular end-systolic volume and left ventricular end-systolic volume index all significantly correlated with left ventricular end-systolic diameter index of ≥ 2.1 cm/m² (Pearson $r = 0.41$ and 0.50 , respectively, all $P < .001$) and were therefore not considered in the multivariable analysis.

Table 6 of the supplementary data. Outcomes according to baseline left ventricular end-systolic diameter index

	LVESDi < 2.1 cm/m ² (n = 307)	LVESDi ≥ 2.1 cm/m ² (n = 103)	P
Primary outcome			
<i>All-cause mortality or heart failure hospitalizations at 1 y</i>	39/307 (12.7)	22/103 (21.4)	.033
Secondary outcomes			
<i>All-cause mortality at 1 y</i>	19/307 (6.2)	16/103 (15.5)	.003
<i>Heart failure hospitalizations at 1 y</i>	23/307 (7.5)	14/103 (13.6)	.042
<i>NYHA class III-IV or above-moderate mitral regurgitation at 1 y</i>	29/165 (17.6)	11/52 (21.2)	.897
NYHA class III-IV	20/156 (12.8)	4/48 (8.3)	.399
Above-moderate mitral regurgitation	11/135 (8.1)	8/49 (16.3)	.107
<i>Above-mild mitral regurgitation at 1-mo</i>	76/234 (32.5)	39/80 (48.8)	.009
Data availability			
<i>All-cause mortality and/or heart failure hospitalizations at 1 y</i>	307/307 (100.0)	103/103 (100.0)	1.000
<i>NYHA class III-IV or above-moderate mitral regurgitation at 1 y</i>	165/288 (57.3)	52/87 (59.8)	.566
NYHA class III-IV	156/288 (54.2)	48/87 (55.2)	.459
Above-moderate mitral regurgitation	135/288 (46.9)	49/87 (56.3)	.609
<i>Above-mild mitral regurgitation at 1-mo</i>	234/302 (77.5)	80/103 (77.7)	.630

NYHA, New York Heart Association.

Data are presented as No. (%).

Table 7 of the supplementary data. Echocardiography-only binary logistic regression model for the composite outcome of New York Heart Association class III-IV or above-moderate mitral regurgitation at 1 year

	Univariable		Multivariable	
	OR (95%CI)	P	OR (95%CI)	P
Mitral valve-related baseline echocardiographic parameters				
<i>Severe mitral regurgitation</i>	1.39 (0.52-3.68)	.509		
<i>Mitral effective regurgitant orifice area by PISA</i>				
Continuous	1.04 (0.27-4.00)	.960		
≥ 0.40 cm ² , median	1.00 (0.46-2.18)	.993		
≥ 0.52 cm ² , 4th quartile	1.21 (0.50-2.93)	.673		
<i>Mitral regurgitant volume by PISA</i>				
Continuous	1.00 (0.99-1.02)	.500		
≥ 55.3 mL, median	1.20 (0.51-2.82)	.676		
≥ 60.0 mL	1.13 (0.48-2.67)	.786		
≥ 77.2 mL, 4th quartile	1.20 (0.46-3.16)	.707		
<i>Transmitral mean pressure gradient</i>				
Continuous	1.20 (0.95-1.52)	.131		
≥ 3 mmHg, median	1.04 (0.50-2.19)	.914		
≥ 4 mmHg, 4th quartile	1.83 (0.86-3.90)	.115		
≥ 5 mmHg	2.70 (1.04-7.01)	.041	1.78 (0.54-5.91)	.344
<i>E wave peak velocity</i>				
Continuous	1.00 (1.00-1.01)	.803		
≥ 127 cm/sec, median	1.26 (0.56-2.83)	.574		
≥ 150 cm/sec, 4th quartile	1.34 (0.56-3.20)	.505		
<i>Mitral annular calcification</i>				
Any	1.18 (0.55-2.54)	.680		
Above-mild	3.42 (1.28-9.17)	.015	3.40 (1.13-8.61)	.039
<i>Mitral leaflet calcification</i>	2.08 (0.98-4.44)	.058	1.19 (0.47-3.00)	.718
<i>Mitral annular diameter at mid-diastole</i>				
Anterior-posterior				
Continuous	1.53 (0.70-3.33)	.282		
≥ 28.9 mm, median	1.15 (0.54-2.45)	.709		
≥ 32.7 mm, 4th quartile	1.04 (0.44-2.45)	.931		
Anterior-posterior, index				
Continuous	1.07 (0.33-3.45)	.905		
≥ 16.0 mm, median	1.17 (0.55-2.49)	.680		
≥ 18.6 mm, 4th quartile	1.11 (0.48-2.57)	.803		
Medial-lateral				
Continuous	1.28 (0.65-2.52)	.472		
≥ 32.2 mm, median	1.28 (0.59-2.76)	.538		

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≥ 36.0 mm, 4th quartile	1.93 (0.88-4.26)	.103		
Medial-lateral, index				
Continuous	3.14 (1.03-9.57)	.044		
≥ 17.8 mm, median	1.77 (0.81-3.88)	.151		
≥ 20.2 mm, 4th quartile	2.27 (1.03-4.99)	.041	1.89 (0.76-4.73)	.174
<i>Mitral leaflet tethering or restriction</i>	3.10 (0.38-24.94)	.289		
Nonmitral valve-related baseline echocardiographic parameters				
<i>Left ventricular ejection fraction</i>				
Continuous	0.99 (0.97-1.03)	.709		
≤ 63%, median	1.05 (0.51-2.16)	.889		
≤ 60%, guideline criterion	1.22 (0.59-2.54)	.588		
≤ 56%, 1st quartile	1.08 (0.44-2.62)	.867		
<i>Left ventricular end-systolic diameter</i>				
Continuous	1.22 (0.75-1.96)	.424		
≥ 3.2 cm, median	1.24 (0.60-2.54)	.562		
≥ 3.8 cm, 4th quartile	1.66 (0.67-4.12)	.276		
≥ 4.0 cm, guideline criterion	1.60 (0.61-4.22)	.338		
<i>Left ventricular end-systolic diameter index</i>				
Continuous	1.08 (0.46-2.54)	.855		
≥ 1.8 cm/m ² , median	1.38 (0.67-2.85)	.383		
≥ 2.1 cm/m ² , 4th quartile	1.08 (0.49-2.42)	.845		
<i>Left ventricular end-diastolic diameter</i>				
Continuous	1.16 (0.73-1.83)	.534		
≥ 5.0 cm, median	1.05 (0.51-2.17)	.889		
≥ 5.5 cm, 4th quartile	1.12 (0.49-2.55)	.786		
<i>Left ventricular end-diastolic diameter index</i>				
Continuous	1.21 (0.60-2.44)	.604		
≥ 2.8 cm/m ² , median	1.13 (0.55-2.33)	.742		
≥ 3.1 cm/m ² , 4th quartile	1.43 (0.64-3.16)	.384		
<i>Left ventricular end-systolic volume</i>				
Continuous	1.01 (0.99-1.02)	.514		
≥ 33.0 mL, median	1.06 (0.52-2.18)	.876		
≥ 48.3 mL, 4th quartile	1.15 (0.48-2.80)	.751		
<i>Left ventricular end-systolic volume index</i>				
Continuous	1.00 (0.97-1.04)	.845		
≥ 18.5 mL/m ² , median	1.02 (0.50-2.11)	.951		
≥ 25.8 mL/m ² , 4th quartile	1.11 (0.48-2.54)	.812		
<i>Left ventricular end-diastolic volume</i>				
Continuous	1.00 (0.99-1.01)	.518		
≥ 92.0 mL, median	1.01 (0.48-2.08)	.978		
≥ 120.0 mL, 4th quartile	1.24 (0.53-2.88)	.623		
<i>Left ventricular end-diastolic volume index</i>				
Continuous	1.00 (0.98-1.02)	.955		
≥ 50.7 mL/m ² , median	1.33 (0.65-2.74)	.439		
≥ 64.7 mL/m ² , 4th quartile	1.29 (0.55-2.99)	.557		

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<i>Left ventricular mass index, ASE formula</i>				
Continuous	1.04 (0.99-1.13)	.345		
≥ 117.2 gr/m ² , median	1.30 (0.64-2.64)	.472		
<i>Left atrial volume index</i>				
Continuous	1.02 (1.00-1.03)	.010		
≥ 60 mL/m ² , guideline criterion and median	2.96 (1.34-6.50)	.002	2.40 (1.45-6.07)	.016
≥ 76 mL/m ² , 4th quartile	3.54 (1.59-7.87)	.007		
<i>Moderate or greater aortic stenosis/regurgitation</i>	2.13 (0.66-6.95)	.209		
<i>Right ventricular dysfunction</i>				
Any	1.56 (0.70-3.47)	.272		
Moderate/severe	1.41 (0.50-4.00)	.514		
<i>Basal right ventricular diameter at end-diastole</i>				
Continuous	1.30 (0.79-2.12)	.300		
≥ 4.0 cm, median	1.29 (0.58-2.51)	.612		
≥ 4.4 cm, 4th quartile	1.43 (0.64-3.19)	.380		
<i>Above-moderate tricuspid regurgitation</i>	4.54 (1.96-10.53)	< .001	3.00 (1.27-9.50)	.013
<i>TAPSE</i>				
Continuous	0.74 (0.34-1.63)	.453		
≤ 18 mm, median	1.01 (0.40-2.53)	.992		
≤ 15 mm, 1st quartile	2.07 (0.79-5.43)	.140		
<i>PASP</i>				
Continuous	1.02 (1.00-1.04)	.040	1.00 (0.97-1.03)	.932
> 43 mmHg, median	1.91 (0.91-4.00)	.089		
> 50 mmHg, guideline criterion	1.61 (0.78-3.33)	.198		
> 57 mmHg, 4th quartile	2.14 (0.99-4.63)	.052		
<i>TAPSE/PASP, continuous</i>				
Continuous	0.23 (0.03-1.64)	.141		
≤ 0.41 mm/mmHg, median	1.32 (0.52-3.32)	.559		
≤ 0.29 mm/mmHg, 1st quartile	1.28 (0.46-3.58)	.637		
<i>Speckle-tracking</i>				
<i>Left ventricular global longitudinal strain</i>				
Continuous, less negative	1.06 (0.96-1.17)	.248		
Less negative than -15.9%, median	1.68 (0.74-3.80)	.216		
Less negative than -12.3%, 4th quartile	1.22 (0.42-3.58)	.713		

95%CI, confidence interval; ASE, American Society of Echocardiography; OR, odds ratio; PASP,

pulmonary arterial systolic pressure; PISA, proximal isovelocity surface area; TAPSE, tricuspid annular

plane systolic excursion.

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Table 8 of the supplementary data. Echocardiography-only binary logistic regression model for the outcome of above-mild mitral regurgitation at 1-month

	Univariable		Multivariable	
	OR (95%CI)	P	OR (95%CI)	P
Mitral valve-related baseline echocardiographic parameters				
<i>Severe mitral regurgitation</i>	2.25 (1.10-4.59)	.027		
<i>Mitral effective regurgitant orifice area by PISA</i>				
Continuous	2.98 (0.99-8.92)	.052		
≥ 0.40 cm ² , median	2.27 (1.36-3.80)	.002	2.90 (1.40-6.01)	.004
≥ 0.52 cm ² , 4th quartile	2.33 (1.34-4.06)	.003		
<i>Mitral regurgitant volume by PISA</i>				
Continuous	1.01 (0.99-1.02)	.079		
≥ 55.3 mL, median	2.04 (1.16-3.58)	.014		
≥ 60.0 mL	2.12 (1.21-3.72)	.009		
≥ 77.2 mL, 4th quartile	2.48 (1.32-4.63)	.005		
<i>Transmitral mean pressure gradient</i>				
Continuous	1.13 (0.98-1.31)	.105		
≥ 3 mmHg, median	1.05 (0.65-1.69)	.852		
≥ 4 mmHg, 4th quartile	1.53 (0.94-2.49)	.088		
≥ 5 mmHg	1.80 (0.97-3.34)	.062	1.52 (0.56-4.07)	.410
<i>E wave peak velocity</i>				
Continuous	1.01 (0.99-1.01)	.094	1.00 (0.99-1.02)	.434
≥ 127 cm/sec, median	1.23 (0.75-2.03)	.411		
≥ 150 cm/sec, 4th quartile	1.60 (0.92-2.81)	.099		
<i>Mitral annular calcification</i>				
Any	1.36 (0.85-2.19)	.202		
Above-mild	2.65 (1.37-5.14)	.004	2.93 (1.06-6.12)	.039
<i>Mitral leaflet calcification</i>	1.95 (1.16-3.27)	.012	1.95 (0.90-4.21)	.089
<i>Mitral annular diameter at mid-diastole</i>				
Anterior-posterior				
Continuous	1.00 (0.65-1.53)	.999		
≥ 28.9 mm, median	1.50 (0.92-2.45)	.104		
≥ 32.7 mm, 4th quartile	1.22 (0.70-2.14)	.486		
Anterior-posterior, index				
Continuous	2.74 (1.36-5.53)	.005		
≥ 16.0 mm, median	1.40 (0.86-2.28)	.177		
≥ 18.6 mm, 4th quartile	1.50 (0.87-2.58)	.142		
Medial-lateral				
Continuous	1.14 (0.74-1.76)	.559		
≥ 32.2 mm, median	1.41 (0.86-2.29)	.172		
≥ 36.0 mm, 4th quartile	1.28 (0.73-2.22)	.390		
Medial-lateral, index				

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Continuous	2.25 (1.12-4.50)	.023		
≥ 17.8 mm, median	1.11 (0.68-1.80)	.687		
≥ 20.2 mm, 4th quartile	2.96 (1.68-5.23)	< .001	2.66 (1.21-5.86)	.015
<i>Mitral leaflet tethering or restriction</i>	1.67 (0.58-4.75)	.340		
Nonmitral valve-related baseline echocardiographic parameters				
<i>Left ventricular ejection fraction</i>				
Continuous	1.00 (0.98-1.02)	.926		
≤ 63%, median	1.22 (0.77-1.94)	.404		
≤ 60%, guideline criterion	1.00 (0.63-1.59)	.999		
≤ 56%, 1st quartile	1.08 (0.65-1.80)	.766		
<i>Left ventricular end-systolic diameter</i>				
Continuous	1.02 (0.76-1.36)	.895		
≥ 3.2 cm, median	1.44 (0.91-2.29)	.124		
≥ 3.8 cm, 4th quartile	1.10 (0.65-1.87)	.710		
≥ 4.0 cm, guideline criterion	1.06 (0.60-1.90)	.835		
<i>Left ventricular end-systolic diameter index</i>				
Continuous	1.74 (1.03-2.93)	.037		
≥ 1.8 cm/m ² , median	1.57 (0.99-2.50)	.054		
≥ 2.1 cm/m ² , 4th quartile	1.98 (1.18-3.32)	.010	1.67 (1.17-3.56)	.028
<i>Left ventricular end-diastolic diameter</i>				
Continuous	1.12 (0.85-1.48)	.411		
≥ 5.0 cm, median	1.19 (0.75-1.89)	.456		
≥ 5.5 cm, 4th quartile	1.13 (0.68-1.89)	.630		
<i>Left ventricular end-diastolic diameter index*</i>				
Continuous	2.30 (1.44-3.67)	< .001		
≥ 2.8 cm/m ² , median	2.34 (1.46-3.75)	< .001		
≥ 3.1 cm/m ² , 4th quartile	2.35 (1.39-3.98)	.001		
<i>Left ventricular end-systolic volume</i>				
Continuous	1.00 (0.99-1.01)	.705		
≥ 33.0 mL, median	1.22 (0.77-1.92)	.407		
≥ 48.3 mL, 4th quartile	1.02 (0.60-1.74)	.932		
<i>Left ventricular end-systolic volume index</i>				
Continuous	1.01 (0.99-1.02)	.586		
≥ 18.5 mL/m ² , median	1.20 (0.76-1.90)	.442		
≥ 25.8 mL/m ² , 4th quartile	1.33 (0.79-2.24)	.287		
<i>Left ventricular end-diastolic volume</i>				
Continuous	1.00 (0.99-1.01)	.973		
≥ 92.0 mL, median	1.14 (0.72-1.81)	.577		
≥ 120.0 mL, 4th quartile	1.17 (0.69-1.98)	.565		
<i>Left ventricular end-diastolic volume index</i>				
Continuous	1.01 (1.00-1.02)	.125		
≥ 50.7 mL/m ² , median	1.04 (0.65-1.64)	.882		
≥ 64.7 mL/m ² , 4th quartile	1.26 (0.75-2.11)	.389		
<i>Left ventricular mass index, ASE formula</i>				
Continuous	1.01 (0.99-1.02)	.103		

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≥ 117.2 g/m ² , median	1.64 (0.93-2.60)	.139		
Left atrial volume index				
Continuous	1.73 (1.08-2.79)	.023		
≥ 60 mL/m ² , guideline criterion and median	1.02 (1.01-1.03)	.001	1.41 (0.60-2.33)	.717
≥ 76 mL/m ² , 4th quartile	2.13 (1.24-3.67)	.007		
Moderate or greater aortic stenosis/regurgitation	1.26 (0.54-2.93)	.594		
Right ventricular dysfunction				
Any	1.06 (0.62-1.84)	.824		
Moderate/severe	1.54 (0.70-3.37)	.283		
Basal right ventricular diameter at end-diastole				
Continuous	1.09 (0.80-1.50)	.581		
≥ 4.0 cm, median	1.08 (0.68-1.73)	.737		
≥ 4.4 cm, 4th quartile	1.12 (0.66-1.89)	.676		
Above-moderate tricuspid regurgitation	2.13 (1.18-3.85)	.012	4.49 (1.52-8.29)	.007
TAPSE				
Continuous	0.98 (0.58-1.64)	.925		
≤ 18 mm, median	1.24 (0.71-2.17)	.443		
≤ 15 mm, 1st quartile	1.09 (0.59-2.02)	.790		
PASP				
Continuous	1.02 (1.02-1.03)	.027	1.01 (0.99-1.04)	.192
> 43 mmHg, median	1.52 (0.96-2.41)	.076		
> 50 mmHg, guideline criterion	1.31 (0.82-2.09)	.260		
> 57 mmHg, 4th quartile	1.62 (0.95-2.74)	.074		
TAPSE/PASP, continuous				
Continuous	0.59 (0.21-1.66)	.319		
≤ 0.41 mm/mmHg, median	1.05 (0.61-1.83)	.855		
≤ 0.29 mm/mmHg, 1st quartile	1.51 (0.79-2.89)	.218		
Speckle-tracking				
Left ventricular global longitudinal strain				
Continuous, less negative	0.99 (0.93-1.04)	.637		
Less negative than -15.9%, median	0.88 (0.54-1.46)	.630		
Less negative than -12.3%, 4th quartile	0.96 (0.53-1.74)	.902		

95%CI, confidence interval; OR, odds ratio; PASP, pulmonary arterial systolic pressure; PISA, proximal isovelocity surface area; TAPSE, tricuspid annular plane systolic excursion.

* Left ventricular end-diastolic diameter index, both as a continuous variable and as a dichotomous one, significantly correlated with left ventricular end-systolic diameter index of ≥ 2.1 cm/m² (Pearson $r = 0.46-0.55$, all $P < .001$) and was therefore not considered in the multivariable analysis.

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Table 9 of the supplementary data. Baseline clinical characteristics according to baseline left ventricular end-systolic diameter index

	LVESDi < 2.1 cm/m ² (n = 307)	LVESDi ≥ 2.1 cm/m ² (n = 103)	P
Demographic details			
<i>Age</i>			
Median, y	84 [77-89]	81 [73-87]	.046
≥75 y	244 (76.7)	74 (23.3)	.108
<i>Sex male</i>	186 (60.6)	63 (61.2)	.917
<i>Body surface area (Mosteller formula), m²</i>	1.79 [1.62-2.04]	1.76 [1.52-1.99]	0.169
Comorbidities			
<i>Obesity (body mass index ≥ 30 kg/m²)</i>	49 (16.0)	4 (3.9)	.002
<i>Diabetes mellitus</i>	63 (20.7)	14 (13.7)	.122
<i>Hypertension</i>	248 (81.0)	84 (81.6)	.909
<i>Smoking</i>	6 (2.0)	6 (5.8)	.083
<i>Chronic obstructive pulmonary disease</i>	36 (11.7)	14 (13.6)	.617
<i>Anemia</i>	180 (58.6)	58 (56.3)	.680
<i>Stage ≥ III chronic kidney disease</i>	80 (77.7)	229 (75.8)	.704
<i>Previous MI, PCI, or CABG</i>	89 (29.0)	31 (30.1)	.831
<i>Prior stroke or transient ischemic attack</i>	40 (13.0)	12 (11.7)	.716
<i>Peripheral arterial disease</i>	29 (9.5)	6 (5.8)	.252
<i>Atrial fibrillation/flutter</i>	159 (55.0)	51 (49.5)	.330
Heart failure features			
<i>New York Heart Association class</i>			.924
II	24 (7.8)	9 (8.7)	
III	131 (42.7)	45 (43.7)	
IV	152 (49.5)	49 (47.6)	
<i>KCCQ12 score, points</i>	42.5 [20.7-66.4]	40.6 [21.4-63.5]	.976
<i>6-minute walk test distance, m</i>	244 [152-335]	258 [122-366]	.941
<i>Serum B-type natriuretic peptide, pg/mL</i>	291 [158-568]	479 [227-933]	< .001
Procedural risk			
<i>STS score for mitral valve repair</i>	5.2 [3.0-8.0]	5.4 [2.6-8.2]	.892
<i>Mitral regurgitation international database score</i>	9 [8-11]	9 [8-10]	0.797
<i>MitraScore</i>	3 [2-4]	3 [2-4]	.540
Treatment			
<i>Medications</i>			
Beta-blockers	186 (60.6)	64 (62.1)	.780
Renin angiotensin system inhibitors	136 (44.3)	50 (48.5)	.454
Mineralocorticoid receptor antagonists	25 (8.1)	19 (18.4)	.003
Loop diuretics	210 (68.4)	73 (70.9)	.639
Antiarrhythmics	45 (14.7)	23 (22.3)	.072
Antiplatelets	172 (56.0)	59 (57.3)	.824

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Oral anticoagulants	140 (45.6)	42 (40.8)	.394
<i>Cardiac implantable electronic device</i>			
Total	52 (16.9)	17 (16.5)	.919
Any defibrillator device	7 (2.3)	10 (9.7)	.003
Any pacemaker device	51 (16.6)	11 (10.7)	.146

CABG, coronary artery bypass grafting; KCCQ, Kansas City Cardiomyopathy Questionnaire; MI, myocardial infarction; PCI, percutaneous coronary intervention; STS, Society of Thoracic Surgeons.

Data are presented as No. (%) or median [interquartile range].

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Table 10 of the supplementary data. Baseline echocardiographic data according to baseline left ventricular end-systolic diameter index

	LVESDi < 2.1 cm/m ² (n = 307)	LVESDi ≥ 2.1 cm/m ² (n = 103)	P
Baseline echo timing prior to the procedure, d	26 [8-54]	23 [6-54]	.520
Mitral valve			
<i>Preprocedural transthoracic echocardiography</i>			
Mitral regurgitation severity			.973
Moderate-to-severe	44 (14.4)	15 (14.6)	
Severe	261 (85.6)	88 (85.4)	
Mitral effective regurgitant orifice area by PISA, cm ²	0.40 [0.29-0.52]	0.39 [0.27-0.54]	.434
Mitral regurgitant volume by PISA, mL	55.7 [42.3-77.4]	54.5 [39.4-76.7]	.883
Transmitral mean pressure gradient, mmHg	3 [2-4]	3 [2-4]	.895
E wave peak velocity, cm/sec	127 [104-150]	121 [107-143]	.608
Mitral annular calcification			
Any	113 (36.8)	36 (35.0)	.735
Above-mild	43 (14.0)	10 (9.7)	.261
Mitral leaflet calcification	83 (27.9)	26 (25.7)	.668
Mitral annular diameter at mid-diastole			
Anterior-posterior, mm	28.9 [25.2-32.6]	29.2 [25.6-33.2]	.452
Index, mm/m ²	15.6 [14.0-17.9]	17.6 [14.9-19.4]	< .001
Medial-lateral, mm	31.9 [28.6-35.5]	33.8 [29.2-36.5]	.047
Index, mm/m ²	17.2 [15.2-19.7]	19.4 [17.0-22.0]	< .001
Mitral annular diameter at end-diastole, mm			
Anterior-posterior	26.7 [20.8-31.2]	27.8 [23.7-30.8]	.461
Medial-lateral	28.2 [24.6-34.9]	30.7 [26.2-32.9]	.045
Mitral leaflet tethering/restriction	17 (5.5)	5 (4.9)	.790
Anterior leaflet closing angle, degrees	36 [32-37]	44 [38-60]	.010
Posterior leaflet closing angle, (degrees)	47 [45-53]	46 [45-52]	.945
<i>Intraprocedural transesophageal echocardiography</i>			
Mitral leaflet prolapse and/or flail			.516
Any	301 (98.0)	102 (99.0)	
Anterior	8 (2.6)	2 (1.9)	
Posterior	232 (75.6)	74 (71.8)	
Bileaflet	61 (19.9)	26 (25.2)	
Maximal prolapse height, mm	6.0 [5.0-8.0]	6.5 [5.0-9.0]	.316
Medial-lateral mitral annular diameter at mid-diastole, mm	33.6 [29.5-38.1]	35.4 [29.3-40.1]	.038
Index, mm/m ²	18.6 [15.7-21.2]	20.2 [18.2-23.1]	.001
Mitral valve area by 3-dimensional planimetry, cm ²	5.3 [4.0-6.5]	5.7 [4.6-7.6]	.250
Left heart			
<i>Left ventricular ejection fraction</i>			
Median, %	64 [59-68]	55 [39-63]	< .001

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≤ 60%	111 (36.2)	69 (67.0)	< .001
< 20%	1 (0.3)	1 (1.0)	.440
<i>Left ventricular end-systolic diameter</i>			
Median, cm	3.0 (2.6-3.3)	4.1 [3.7-4.6]	< .001
≥ 4.0cm	18 (5.9)	62 (60.2)	< .001
Index, cm/m ²	1.7 (1.5-1.9)	2.4 [2.2-2.7]	< .001
<i>Left ventricular ejection fraction ≤ 60% or</i>	113 (36.8)	82 (79.6)	< .001
<i>Left ventricular end-systolic diameter ≥ 4.0 cm</i>			
<i>Left ventricular end-diastolic diameter</i>			
Median, cm	4.8 [4.3-5.3]	5.6 [5.0-6.3]	< .001
Index, cm/m ²	2.7 [2.4-2.9]	3.2 [3.0-3.6]	< .001
<i>Left ventricular end-systolic volume</i>			
Median, mL	31.0 [21.0-43.1]	48.0 [31.0-77.0]	< .001
Index, mL/m ²	16.2 [12.0-22.6]	28.1 [20.0-42.4]	< .001
<i>Left ventricular end-diastolic volume, mL</i>			
Median, mL	86.0 [63.0-113.0]	115.0 [83.0-146.0]	< .001
Index, mL/m ²	47.9 [36.4-60.7]	64.2 [48.4-82.8]	< .001
<i>Left ventricular mass index, ASE Formula, g/m²</i>	108.4 [90.4-132.7]	138.3 [119.4-162.4]	< .001
<i>Left atrial volume index</i>			
Median, mL/m ²	58.0 [43.0-72.4]	66.5 [50.5-91.5]	.002
≥ 60mL/m ²	134 (45.3)	59 (60.8)	.008
<i>Moderate of greater aortic stenosis/regurgitation</i>	24 (7.8)	8 (7.8)	.987
Right heart			
<i>Right ventricular dysfunction</i>			
Any	64 (23.9)	36 (35.6)	.023
Moderate/severe	26 (9.7)	13 (12.9)	.377
<i>Basal right ventricular diameter at end-diastole, cm</i>	4.0 [3.5-4.4]	3.9 [3.5-4.4]	.582
<i>Above-moderate tricuspid regurgitation</i>	57 (18.6)	19 (18.6)	.989
Right ventricular-pulmonary arterial coupling			
<i>TAPSE, mm</i>	18 [15-22]	17 [14-22]	.091
<i>PAPS</i>			
Median, mmHg	43 [33-57]	47 [33-57]	.768
> 50 mmHg	117 (38.1)	42 (40.8)	.631
> 70 mmHg	31 (10.1)	10 (9.7)	.909
<i>TAPSE/PASP,mm/Hg</i>	0.44 [0.30-0.62]	0.37 [0.28-0.55]	.106
Speckle-tracking			
<i>Left ventricular global longitudinal strain, %</i>	-16.8 [-19.4-(-13.0)]	-13.8 [-18.1-(-9.6)]	< .001

PASP, pulmonary arterial systolic pressure; PISA, proximal isovelocity surface area; TAPSE, tricuspid annular plane systolic excursion.

Data are presented as No. (%) or median [interquartile range].

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Table 11 of the supplementary data. Procedural details and periprocedural course according to baseline left ventricular end-systolic diameter index

	LVESDi < 2.1 cm/m ² (n = 307)	LVESDi ≥ 2.1 cm/m ² (n = 103)	P
Presentation			
<i>Systolic blood pressure < 90 mmHg</i>	3 (1.0)	1 (1.0)	1.000
<i>Acute decompensated heart failure</i>	26 (8.5)	11 (10.7)	.498
<i>Cardiogenic shock or hemodynamic support</i>	10 (3.3)	3 (2.9)	.863
General procedural aspects			
<i>Urgent procedure</i>	32 (10.4)	13 (12.6)	.537
<i>Total duration, min</i>	113 [92-145]	106 [87-141]	.423
<i>Fluoroscopy duration, min</i>	19 [13-25]	20 [13-27]	.398
<i>Concomitant atrial septal defect closure</i>	13 (4.2)	1 (1.0)	.205
<i>Immediate complications</i>			NA
<i>Leaflet injury</i>	1 (0.3)	0 (0.0)	
<i>Access site bleeding</i>	3 (1.0)	0 (0.0)	
<i>Thromboembolism</i>	1 (0.3)	0 (0.0)	
<i>Conversion to surgery</i>	1 (0.3)	0 (0.0)	NA
Device parameters			
<i>Clips deployed</i>			
0 (aborted/not deployed)	8 (2.6)	1 (1.0)	.460
1	147 (47.9)	38 (36.9)	.052
2	120 (39.1)	47 (45.6)	.242
≥ 3	32 (10.4)	17 (16.5)	.100
Median	1 (1-2)	2 (1-2)	.012
<i>Device generation</i>			.797
1 st	113 (36.8)	40 (38.8)	
2 nd	95 (30.9)	34 (33.0)	
3 rd	68 (22.1)	18 (17.5)	
4 th	31 (10.1)	11 (10.7)	
<i>Clip site</i>			
A2P2	282 (91.9)	97 (94.2)	.441
Non-A2P2	38 (12.4)	10 (9.7)	.466
Postprocedural effects			
<i>Echocardiography</i>			
<i>Mitral regurgitation severity up-to-mild</i>			
Immediately after clip deployment	235 (76.5)	82 (79.6)	.520
At discharge	249 (81.1)	79 (76.7)	.333
At 1-mo	158 (67.5)	41 (51.3)	.009
<i>Data availability among patients remaining alive</i>	234/302 (77.5)	80/103 (77.7)	.630
<i>Transmitral mean pressure gradient, mmHg</i>			
Immediately after clip deployment	3 (2-4)	3 (2-4)	180.
At 1 mo	4 (3-5)	4 (3-5)	.511
<i>Pulmonary venous flow pattern</i>			

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Improvement on either side	221 (84.7)	79 (87.8)	.471
Normalization on either side	192 (70.6)	72 (77.4)	.204
<i>Right heart catheterization</i>			
Change in V wave, mmHg	-7 [-18-(-2)]	-11 -25-(-2))	.382
P-value for pre vs post clip deployment	< .001	< .001	NA
Change in mean left atrial pressure, mmHg	-2 [-7-1]	-3 [-9-1]	.682
P-value for pre vs post clip deployment	< .001	< .001	NA
Change in mean pulmonary arterial pressure, mmHg	-1 [-5-3]	-2 [-8-3]	.076
P-value for pre vs post clip deployment	.199	.008	NA
Periprocedural course			
Hospitalization length, d	1 [1-2]	1 [1-5]	.244
Discharge home	289 (94.4)	93 (91.2)	.242
Medications at 1-mo			
Beta-blockers	148 (58.5)	49 (57.6)	.891
Renin angiotensin system inhibitors	115 (45.8)	50 (58.8)	.038
Mineralocorticoid receptor antagonists	22 (8.7)	14 (16.6)	.044
Loop diuretics	158 (62.5)	57 (67.1)	.445
Antiarrhythmics	40 (15.9)	21 (24.7)	.141
Antiplatelets	174 (68.8)	55 (64.7)	.487
Oral anticoagulants	113 (44.7)	43 (50.0)	.391

NA, not applicable.

Data are presented as No. (%) or median [interquartile range].

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Table 12 of the supplementary data. Univariable clinical-only cox proportional hazard model for the composite outcome of all-cause mortality or heart failure hospitalizations at 1 year

	HR (95%CI)	P
Between-group differing baseline clinical variables and procedural aspects		
<i>Age (continuous)</i>	1.01 (0.98-1.04)	.445
<i>Obesity</i>	0.68 (0.29-1.58)	.373
<i>Serum B-type natriuretic peptide level (continuous)</i>	1.10 (1.01-1.11)	.001
<i>Mineralocorticoid receptor antagonists use</i>	0.99 (0.43-2.30)	.982
<i>Any defibrillator device</i>	2.33 (0.93-5.82)	.070
<i>Number of clips deployed (continuous)</i>	1.03 (0.71-1.41)	.984
Other considerations		
<i>Year of mitral transcatheter edge-to-edge performance</i>		
Continuous	0.92 (0.81-1.05)	.227
2013-2016 (vs 2017-2020)	1.15 (0.70-1.91)	.579
<i>Device generation</i>		
Continuous	0.92 (0.72-1.19)	.543
1st/2nd (vs 3th/4th)	1.13 (0.65-1.98)	.670
1st/2nd/3rd (vs 4th)	1.38 (0.55-3.44)	.492
<i>Data availability regarding mitral regurgitation severity at 1-mo postprocedure</i>	0.63 (0.32-1.25)	.481

95%CI, 95% confidence interval; HR, hazard ratio.

Table 13 of the supplementary data. Multivariable comprehensive cox proportional hazard model for the composite outcome of all-cause mortality or heart failure hospitalizations at 1 year

	Speckle-tracking not included		Speckle-tracking included	
	HR (95%CI)	P	HR (95%CI)	P
<i>Between-group differing baseline clinical variables</i>				
Serum B-type natriuretic peptide level (continuous)	1.01 (1.00-1.10)	.066	1.00 (0.99-1.01)	.360
Any defibrillator device	0.97 (0.43-1.45)	.980	0.99 (0.33-2.12)	.979
<i>Mitral valve-related baseline echocardiographic parameters</i>				
Mitral effective regurgitant orifice area by PISA (continuous)	3.41 (0.84-16.67)	.071	3.42 (0.33-15.71)	.226
Mitral annular calcification	1.57 (0.63-3.95)	.333	1.97 (0.69-5.63)	.207
Medial-lateral mitral annular diameter at mid-diastole \geq 32.2 mm (median)	1.91 (0.69-5.28)	.212	3.72 (1.08-12.82)	.038
<i>Nonmitral valve-related baseline echocardiographic parameters</i>				
Left ventricular ejection fraction \leq 56% (1st quartile)	1.66 (0.70-3.92)	.248	1.83 (0.66-5.07)	.242
Left ventricular end-systolic diameter index \geq 2.1 cm/m ² (4th quartile) ^a	2.40 (1.05-6.06)	.044	2.89 (1.04-7.98)	.042
Left ventricular end-diastolic diameter (continuous)	1.26 (0.72-2.21)	.412	1.05 (0.52-1.75)	.879
Tricuspid annular plane systolic excursion \leq 18 mm (median)	1.56 (0.63-3.91)	.336	1.47 (0.52-4.15)	.471
<i>Speckle-tracking</i>				
Left ventricular global longitudinal strain less negative than -12.3% (4th quartile)	NA	NA	1.08 (0.35-3.33)	.899

95%CI, 95% confidence interval; HR, hazard ratio; NA, not applicable; PISA, proximal isovelocity surface area.

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^a Left ventricular end-systolic volume and left ventricular end-systolic volume index all significantly correlated with left ventricular end-systolic diameter index of ≥ 2.1 cm/m² (Pearson $r = 0.41$ and 0.50 , respectively, all $P < .001$) and were therefore not considered in the multivariable analysis.

Table 14 of the supplementary data. Univariable clinical-only cox proportional hazard model for the separate outcomes of all-cause mortality and heart failure hospitalizations at 1 year

	All-cause mortality		Heart failure hospitalizations	
	HR (95%CI)	P	HR (95%CI)	P
Between-group differing baseline clinical variables and procedural aspects				
<i>Age (continuous)</i>	1.03 (0.99-1.07)	.132	1.01 (0.97-1.03)	.964
<i>Obesity</i>	0.38 (0.09-1.60)	.187	0.76 (0.27-2.14)	.601
<i>Serum B-type natriuretic peptide level (continuous)</i>	1.01 (1.01-1.10)	.001	1.00 (1.00-1.01)	.087
<i>Mineralocorticoid receptor antagonists use</i>	0.85 (0.26-2.77)	.784	1.41 (0.55-3.61)	.477
<i>Any defibrillator device</i>	3.20 (1.13-9.06)	.029	2.28 (0.70-7.44)	.170
<i>Number of clips deployed (continuous)</i>	1.06 (0.67-1.67)	.807	1.08 (0.69-1.68)	.749
Other considerations				
<i>Year of mitral transcatheter edge-to-edge performance</i>				
Continuous	0.94 (0.79-1.12)	.477	0.92 (0.78-1.10)	.362
2013-2016 (vs 2017-2020)	1.15 (0.59-2.24)	.674	1.09 (0.57-2.09)	.790
<i>Device generation</i>				
Continuous	0.95 (0.68-1.32)	.748	0.96 (0.69-1.32)	.793
1st/2nd (vs 3th/4th)	1.25 (0.58-2.66)	.571	1.04 (0.51-2.10)	.922
1st/2nd/3 rd (vs 4th)	1.09 (0.38-3.08)	.874	1.02 (0.36-2.87)	.973
<i>Data availability regarding mitral regurgitation severity at 1-mo postprocedure</i>	0.37 (0.17-0.84)	.016	1.12 (0.40-3.15)	.835

95%CI, confidence interval; HR, hazard ratio.

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Table 15 of the supplementary data. Multivariable comprehensive cox proportional hazard model for the separate outcomes of all-cause mortality and heart failure hospitalizations at 1 year

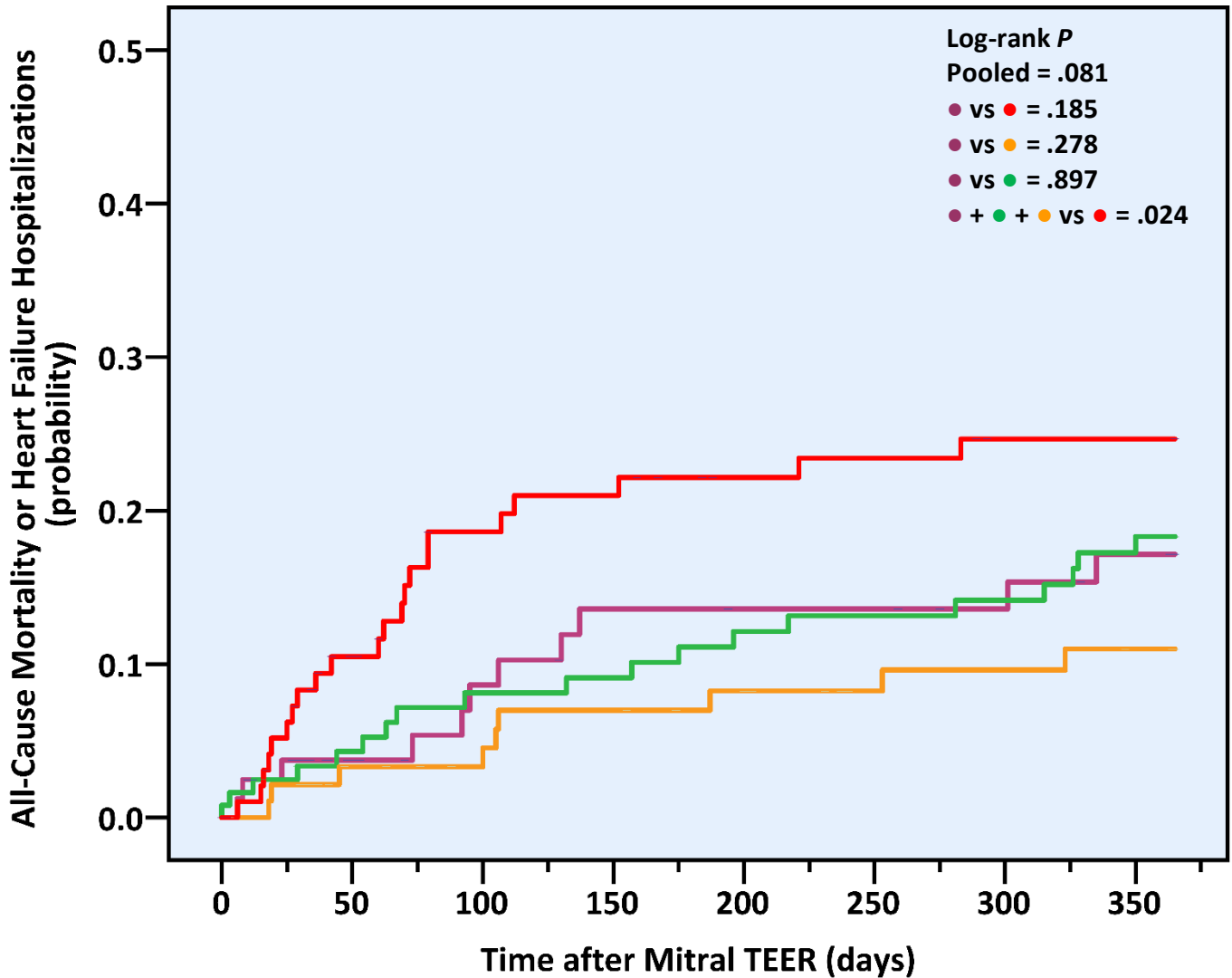
	All-cause mortality				Heart failure hospitalizations			
	Speckle-tracking not included		Speckle-tracking included		Speckle-tracking not included		Speckle-tracking included	
	HR (95%CI)	P	HR (95%CI)	P	HR (95%CI)	P	HR (95%CI)	P
<i>Between-group differing baseline clinical variables</i>								
Serum B-type natriuretic peptide level, continuous	1.01 (1.00-1.01)	.088	1.01 (1.00-1.01)	.376	1.00 (0.99-1.01)	.859	1.00 (0.99-1.01)	.723
Any defibrillator device	1.38 (0.29-6.56)	.688		.744	NA	NA	NA	NA
<i>Mitral valve-related baseline echocardiographic parameters</i>								
Mitral effective regurgitant orifice area by PISA, continuous	2.95 (0.46-2.33)	.145	2.34 (0.10-5.55)	.602	NA	NA	NA	NA
E wave peak velocity ≥ 127 cm/sec, median	2.58 (0.89-4.72)	.080	3.74 (0.94-4.82)	.092	NA	NA	NA	NA
Above-mild mitral annular calcification	NA	NA	NA	NA	1.66 (0.69-4.00)	.263	2.02 (0.81-5.09)	.134
Medial-lateral mitral annular diameter at mid-diastole								
Continuous	2.28 (0.82-6.25)	.114	3.26 (1.05-6.90)	.041	NA	NA	NA	NA
≥ 32.2 mm, median	NA	NA	NA	NA	2.97 (1.31-6.76)	.009	4.76 (1.68-7.58)	.003
<i>Nonmitral valve-related baseline echocardiographic parameters</i>								
Left ventricular ejection fraction ≤ 56%, 1st quartile	3.14 (0.84-6.26)	.127	3.16 (0.93-7.35)	.066	2.06 (0.98-4.32)	.056	1.34 (0.53-3.41)	.542
Left ventricular end-systolic diameter index ≥ 2.1 cm/m ² , 4th quartile*	2.20 (1.89-5.51)	.012	2.38 (1.27-4.72)	.025	2.77 (1.28-6.00)	.010	3.68 (1.48-5.08)	.005
Left atrial volume index, continuous	1.02 (1.01-1.03)	< .001	1.28 (1.07-1.49)	.009	NA	NA	NA	NA
<i>Speckle-tracking</i>								
Left ventricular global longitudinal strain less negative than -12.3%, 4th quartile	NA	NA	2.31 (0.77-5.98)	.137	NA	NA	1.69 (0.66-4.29)	.271
<i>Data availability regarding mitral regurgitation severity at 1-mo postprocedure</i>	0.42 (0.13-1.34)	.141	0.50 (0.12-1.93)	.315	NA	NA	NA	NA

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95%CI, 95% confidence interval; HR, hazard ratio; NA, not applicable; PISA, proximal isovelocity surface area.

* Left ventricular end-systolic volume and left ventricular end-systolic volume index all significantly correlated with left ventricular end-systolic diameter index of ≥ 2.1 cm/m² (Pearson $r = 0.41$ and 0.50 , respectively, all $P < .001$) and were therefore not included in the multivariable analysis.

Figure 1 of the supplementary data. One-year cumulative incidence of the composite outcome of all-cause mortality or heart failure hospitalizations after transcatheter edge-to-edge repair for chronic primary mitral regurgitation according to baseline left ventricular end-systolic diameter index quartiles.



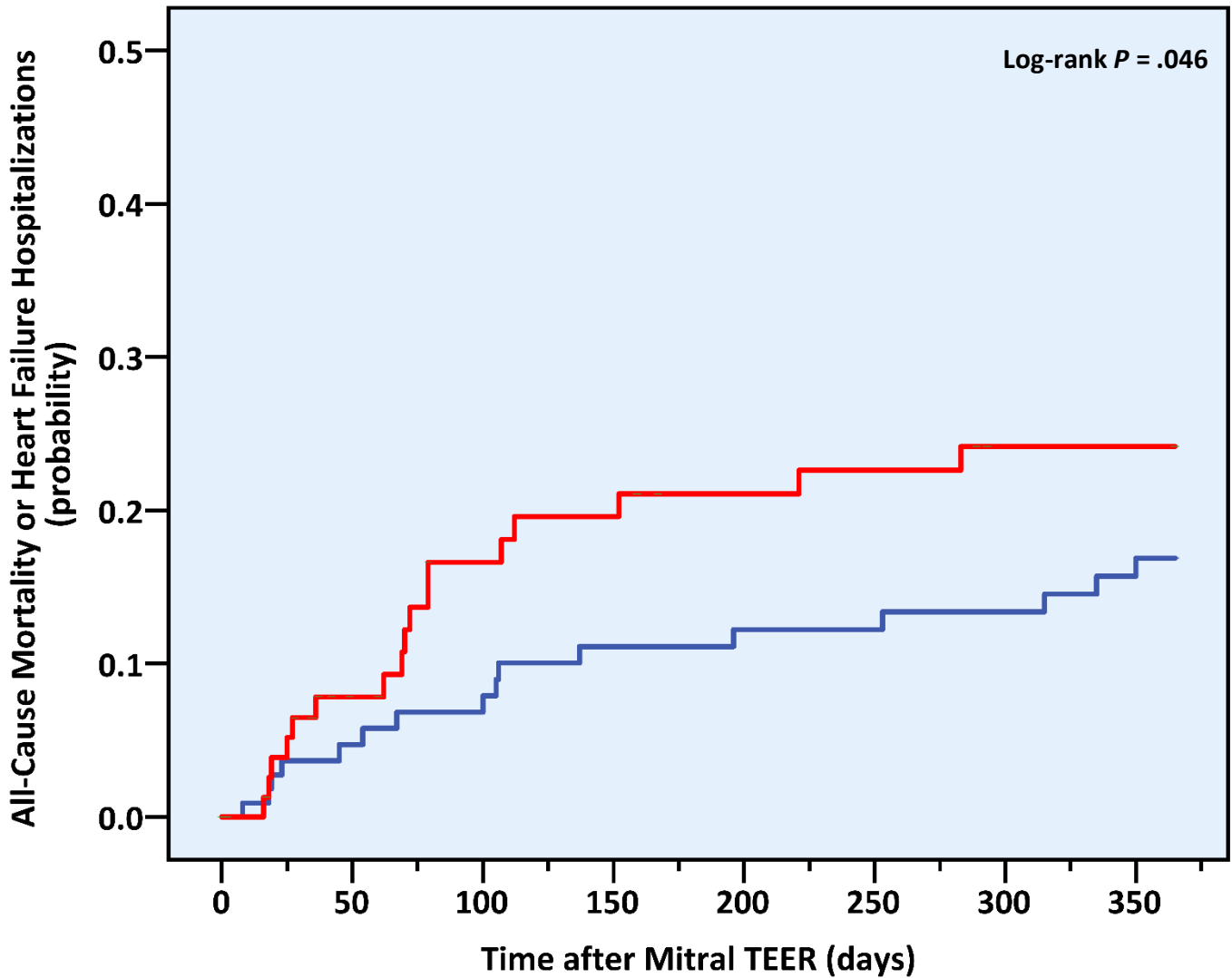
No. at risk	0	50	100	150	200	250	300	350
LVESDi ≥ 2.1 cm/m ²	103	79	69	67	62	61	58	58
LVESDi ≥ 1.8 and < 2.1 cm/m ²	97	82	78	76	72	67	66	64
LVESDi ≥ 1.5 and < 1.8 cm/m ²	125	101	95	92	86	85	84	78
LVESDi < 1.5 cm/m ²	85	61	56	52	51	51	49	46

LVESDi, left ventricular end-systolic diameter index; TEER, transcatheter edge-to-edge repair.

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Figure 2 of the supplementary data. One-year cumulative incidence of the composite outcome of all-cause mortality or heart failure hospitalizations after transcatheter edge-to-edge repair for chronic primary mitral regurgitation according to baseline left ventricular ejection fraction and left ventricular end-systolic diameter.

A Left ventricular ejection fraction $\leq 60\%$ or left ventricular end-systolic diameter ≥ 4.0 cm.



No. at risk

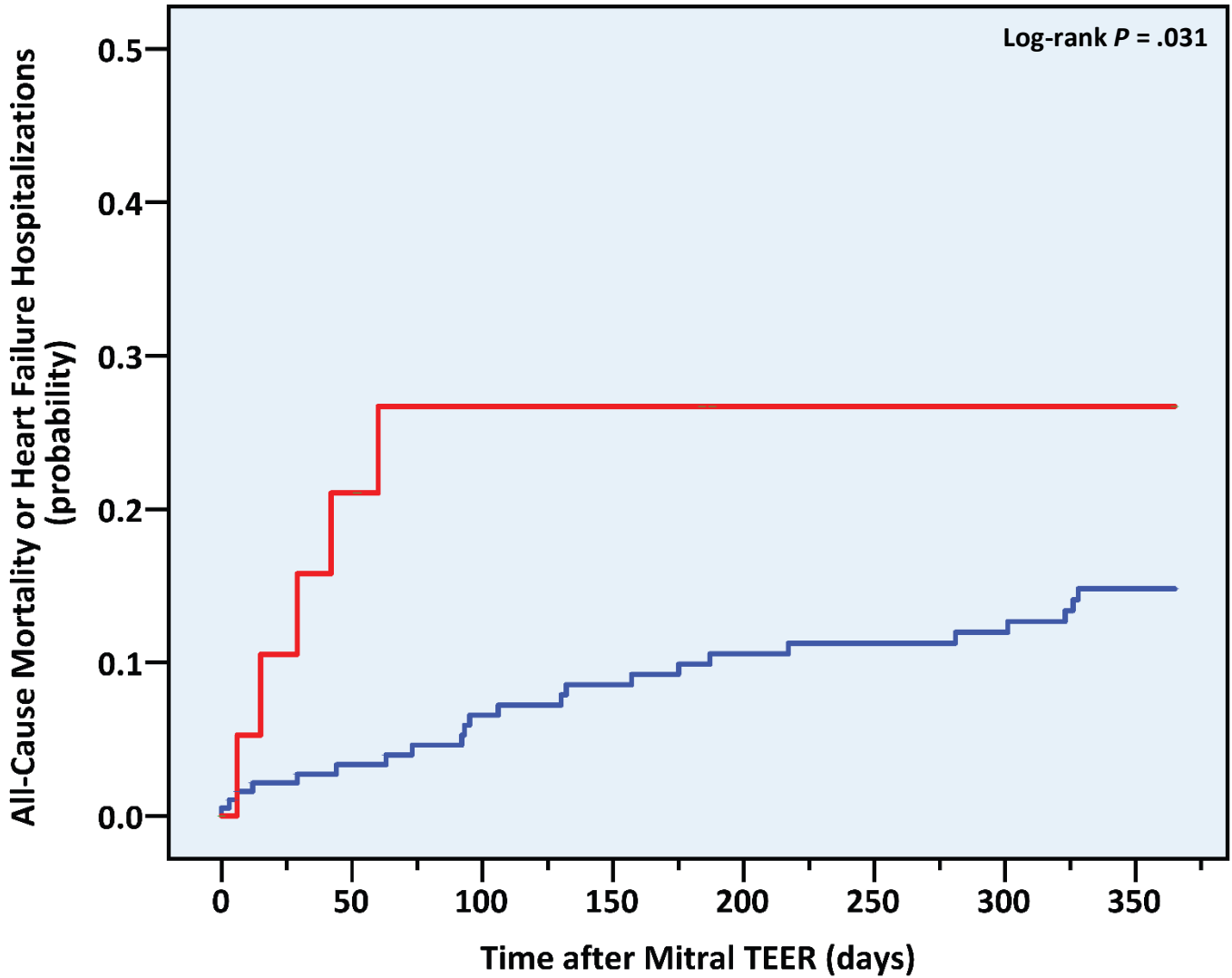
LVESDi ≥ 2.1 cm/m²

LVESDi < 2.1 cm/m²

82	64	56	54	51	50	47	47
113	90	86	83	79	76	75	71

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B Left ventricular ejection fraction > 60% and left ventricular end-systolic diameter < 4.0 cm.



No. at risk

LVESDi ≥ 2.1 cm/m²

21 15 13 13 11 11 11 11

LVESDi < 2.1 cm/m²

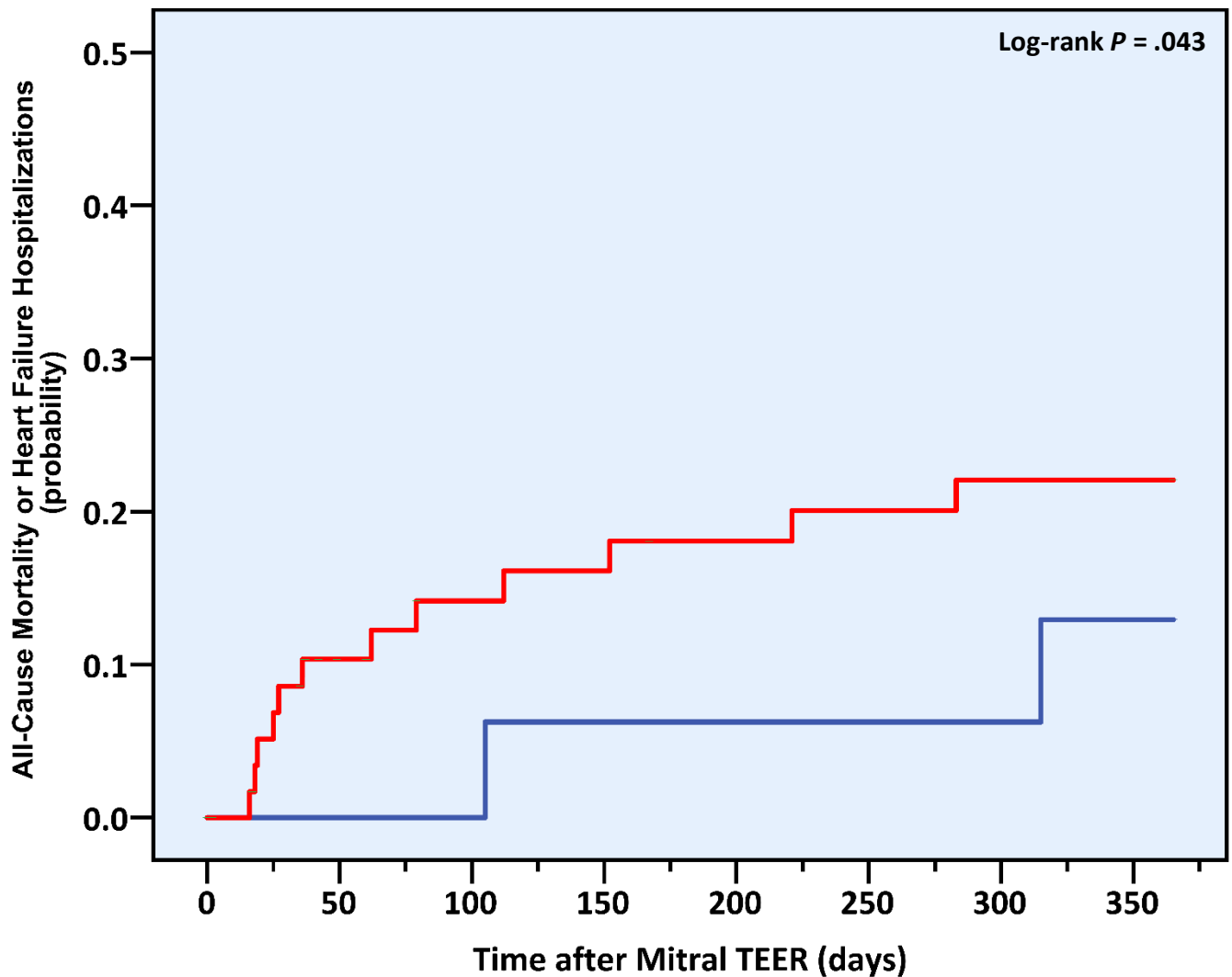
194 154 143 137 130 127 124 117

LVESDi, left ventricular end-systolic diameter index; TEER, transcatheter edge-to-edge repair.

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Figure 3 of the supplementary data. One-year cumulative incidence of the composite outcome of all-cause mortality or heart failure hospitalizations after transcatheter edge-to-edge repair for chronic primary mitral regurgitation according to baseline nonindexed and indexed left ventricular end-systolic diameter.

A Left ventricular end-systolic diameter ≥ 4.0 cm.



No. at risk

LVESDi ≥ 2.1 cm/m²

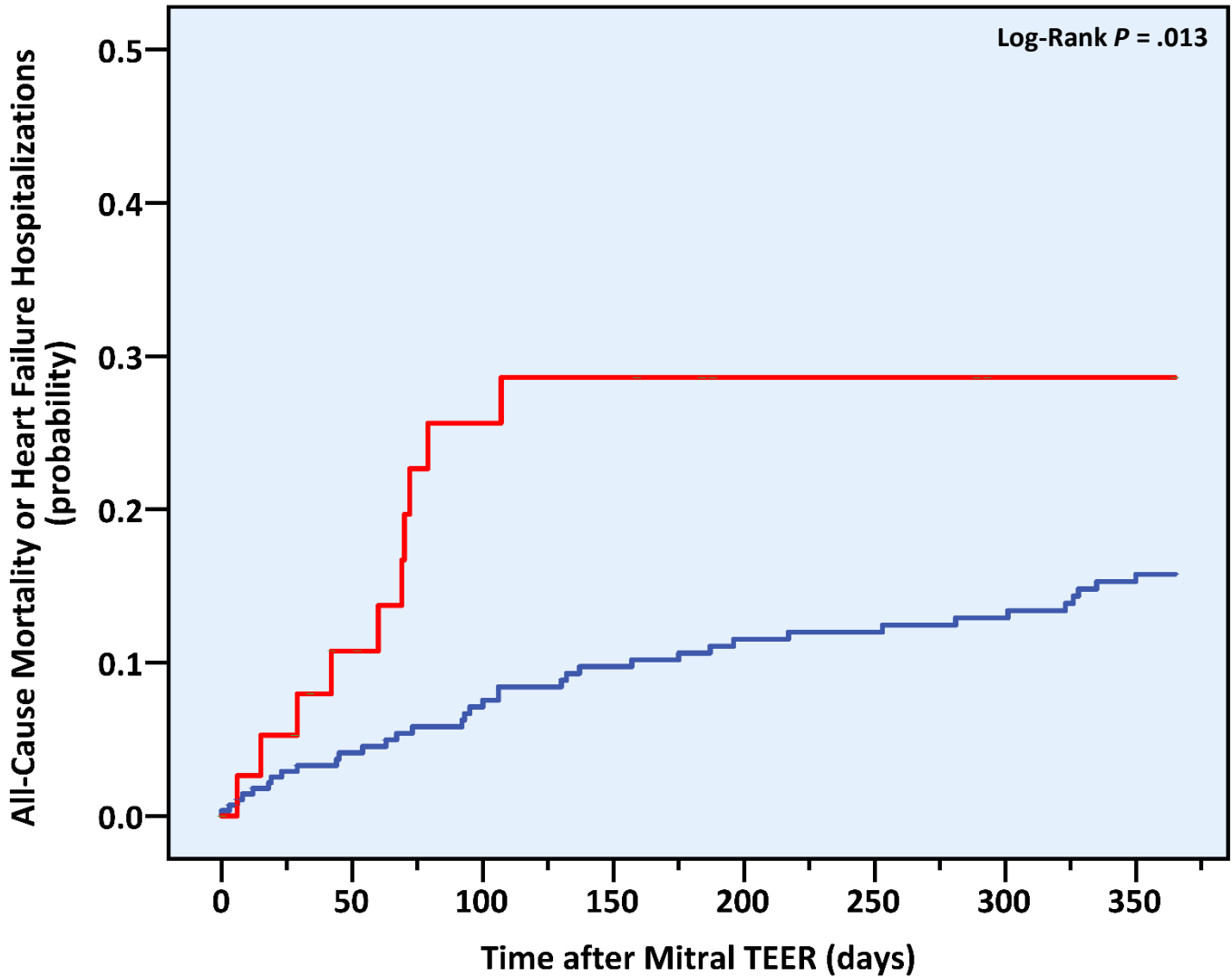
62	48	44	43	41	40	39	39
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LVESDi < 2.1 cm/m²

18	16	16	15	15	14	14	13
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B Left ventricular end-systolic diameter < 4.0 cm.



No. at risk

LVESDi ≥ 2.1 cm/m²

41 31 25 24 21 21 19 19

LVESDi < 2.1 cm/m²

289 228 213 205 194 189 185 175

LVESDi, left ventricular end-systolic diameter index; TEER, transcatheter edge-to-edge repair.

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