Supplementary

Appendix 1

Supplemental Methods S1.1

Intra- and interobserver reproducibility

To assess reproducibility, a subset of 20 randomly selected echocardiograms was reanalyzed. For intraobserver variability, the primary observer repeated the measurements of LA dyssynchrony 2 weeks after the initial analysis, without access to the baseline results. For interobserver variability, a second independent observer performed the measurements on the same loops. Agreements were calculated via a two-way mixed-effects model for the intraclass correlation coefficient.

Supplemental Methods S1.2

Supplemental statistical analysis

In the comparative analysis of parameter prediction performance, we used a binary logistic regression model to combine the HCM-AF score and continuous LA dyssynchrony for the prediction of postoperative AF. Both variables were entered into the model as continuous predictors, and LA dyssynchrony was not dichotomized. The predicted probabilities generated from this model were then used to construct the ROC curve, and AUC was used to evaluate the discriminative performance of the combined model.

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Table S1 Perioperative clinical variables of the study population

Variable	oHCM patients (N=721)	POAF (N=77)	Non-POAF (N=644)	P value
Perioperative parameters				
Operation time, h	1.2(0.8, 1.8)	1.3(0.8, 1.9)	1.2(0.8, 1.8)	0.14
Mechanical ventilation time, h	4.0(2.0, 5.8)	4.0(3.0, 11.5)	4.0(2.0, 5.0)	0.12
Number of resections, n	6(4, 8)	6(4, 7)	6(4, 8)	0.49
Resected myocardium weight, g	4.9(3.3, 7.1)	4.9(3.7, 6.6)	4.9(3.3, 7.2)	0.72
Postoperative hospital stays, d	9(7, 12)	12(9, 16)	9(7, 11)	<0.001
Postoperative anticoagulant	79(11.0)	38(49.4)	41(6.4)	<0.001
Postoperative antiplatelet	69(9.6)	9(11.7)	60(9.3)	0.50
Major clinical events				
New-onset atrial fibrillation	77(10.7)	77(100.0)	0(0.0)	-
Stroke	5(0.7)	1(1.3)	4(0.6)	0.59
All-cause mortality	1(0.1)	0(0.0)	1(0.2)	>0.99
Permanent pacemaker implantation	14(1.9)	5(6.5)	9(1.4)	0.01
Thrombosis	8(1.1)	3(3.9)	5(0.8)	0.04

Values are n (%) or median (interquartile range). oHCM, obstructive hypertrophic cardiomyopathy; POAF, postoperative atrial fibrillation.

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Table S2 Sensitivity analysis of the multivariate model for predicting postoperative atrial fibrillation

Variable	Model A (full)		Model B (excluding age)		Model C (excluding LA diameter)	
	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P
Age at clinical evaluation	1.04 (1.02-1.07)	<0.001	Excluded	–	1.04 (1.01-1.06)	0.003
Diabetes mellitus	1.72 (0.87-3.40)	0.117	1.94 (0.97- 3.93)	0.063	1.71 (0.85-3.42)	0.132
Coronary artery disease	1.64 (0.87-3.11)	0.127	1.75 (0.91-3.40)	0.092	1.51 (0.79-2.89)	0.216
LA diameter	1.10 (1.04-1.14)	<0.001	1.10 (1.04 -1.15)	0.002	Excluded	–
LA dyssynchrony	1.04 (1.02-1.05)	<0.001	1.04 (1.03-1.05)	<0.001	1.04 (1.03-1.05)	<0.001

CI, confidence interval; LA, left atrial; OR, odds ratio.

Table S3 Logistic regression coefficients of the combined model for the prediction of postoperative atrial fibrillation

Variable	β	Standard error	Wald statistic	P values	OR	95% CI
HCM-AF score	0.289	0.048	35.920	<0.001	1.335	1.215-1.467
LA dyssynchrony, continuous	0.036	0.036	35.569	<0.001	1.037	1.024-1.049
Constant	9.891	1.071	85.266	<0.001	–	–

LA dyssynchrony was entered into the model as a continuous variable. CI, confidence interval; LA, left atrial; OR, odds ratio.

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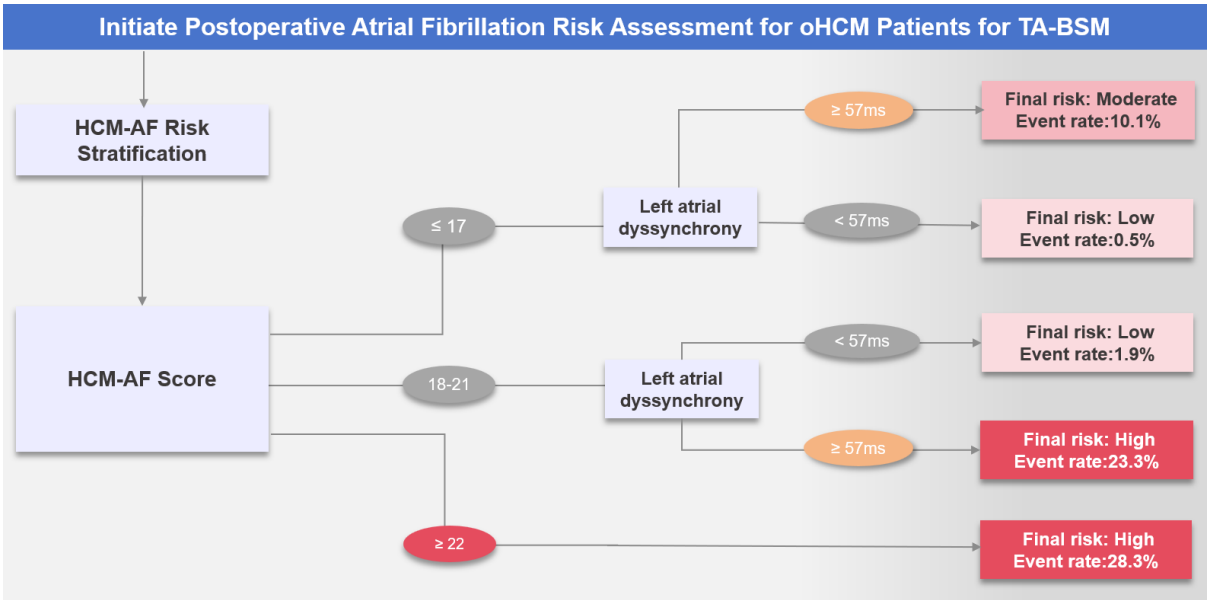


Figure S1 Exploratory workflow of postoperative atrial fibrillation risk assessment for patients with obstructive hypertrophic cardiomyopathy (oHCM) scheduled to undergo transapical beating-heart septal myectomy (TA-BSM). Event rates represent the proportion of patients who developed POAF within each combined HCM-AF score–LA dyssynchrony subgroup. LA, left atrial.

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