

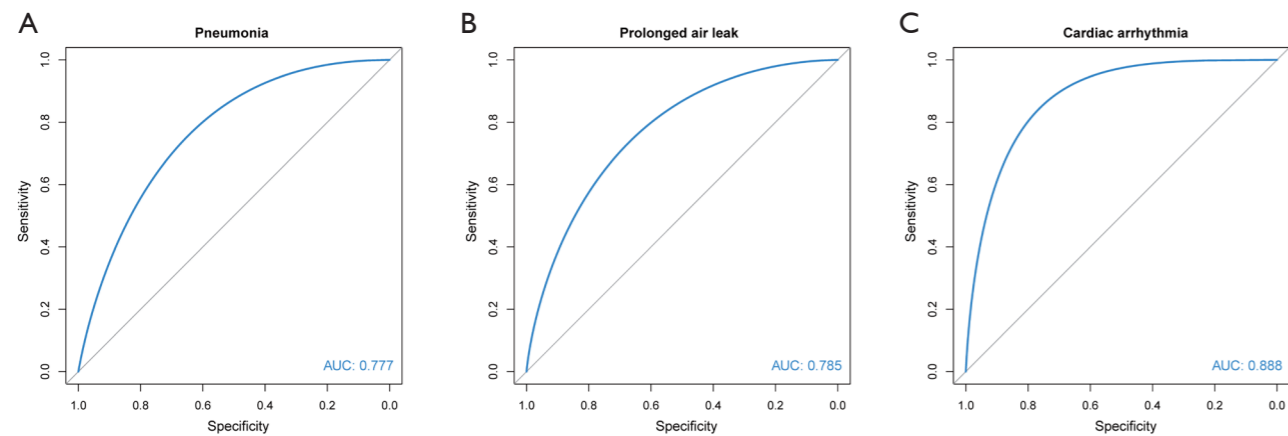
**Table S1** Details of complications

Complications	Complication rates (n=691), n (%)
Postoperative blood transfusion	130 (18.8)
Pneumonia	57 (8.3)
Prolonged air leak	48 (7.0)
Cardiac arrhythmia (atrial fibrillation)	21 (3.0)
Chylothorax	8 (1.2)
Hemothorax requiring surgery	7 (1.0)
Respiratory failure	6 (0.9)
Bronchopleural fistula (one of them underwent thoracostomy)	5 (0.7)
Pyothorax	5 (0.7)
Pulmonary embolism	5 (0.7)
Heart failure	5 (0.7)
Death within 30 days	3 (0.4)

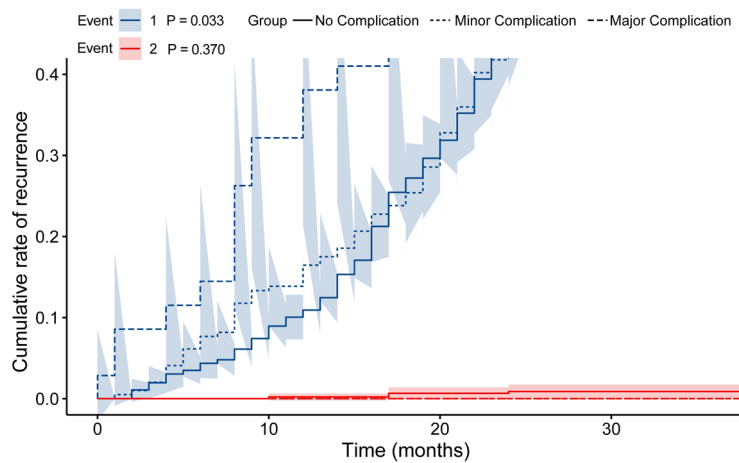
**Table S2** Included variables and their relative importance

Feature rank	Model 1		Model 2		Model 3		Model 4		Model 5	
	Complications	Scaled importance/feature importance weight (%)	Major complications	Scaled importance/feature importance weight (%)	Pneumonia	Scaled importance/feature importance weight (%)	Prolonged air leak	Scaled importance/feature importance weight (%)	Cardiac arrhythmia	Scaled importance/feature importance weight (%)
1	Intraoperative blood transfusion	1.00000/72.57%	Intraoperative blood transfusion	1.00000/64.19%	Thoracotomy or VATS	1.00000/64.73%	Pulmonary artery reconstruction	1.00000/32.08%	Pulmonary artery reconstruction	1.00000/71.20%
2	Pulmonary artery reconstruction	0.28224/20.48%	CCI	0.33572/21.55%	CCI	0.42708/ 27.64%	FEV1	0.98051/ 31.45%	CCI	0.40252/28.66%
3	CCI	0.07369/5.35%	Number of lymph node dissection stations	0.22207/14.26%	Intraoperative blood transfusion	0.09506/6.15%	Thoracotomy or VATS	0.81428/26.12%	Operation time	0.00193/ 0.14%
4	BMI	0.01484/1.08%			Number of lymph node dissection stations	0.02282/1.48%	BMI	0.30523/9.79%	Estimated blood loss	0.00008/0.01%
5	Thoracotomy or VATS	0.00301/0.22%					FEV1% of predicted	0.01602/0.51%		
6	Sex	0.0023/0.17%					Estimated blood loss	0.00121/0.04%		
7	FEV1% of predicted	0.00176/0.13%								
8	Estimated blood loss	0.00012/0.01%								
9	Operation time	0.00009/0.01%								

Scaled importance: the ratio of the relative importance of each feature to the highest relative importance of the feature. Feature importance weight: the ratio of the relative importance of each feature to the sum of the relative importance of all features. CCI, Charlson Comorbidity Index; BMI, body mass index; FEV1, forced expiratory volume in 1 second; VATS, video-assisted thoracic surgery.



**Figure S1** Predictive performance of the logistic regression models. Receiver operating characteristic (ROC) curves of the models predicting pneumonia (A), prolonged air leak (B), and cardiac arrhythmia (C) in the validation cohorts.



**Figure S2** Cumulative incidence curves of cause-specific death and competing risk death subgrouped by complications. ‘Event 1’ represents the endpoint event, while ‘Event 2’ refers to competing endpoint events.