Table S1 Univariate and multivariate survival analyses of entire cohort

Variables	Univariate Analysis			Multivariate Analysis		
	HR	95% CI	P Value	HR	95% CI	P Value
Recurrence-free survival (RFS)						
TNN (per 1 nodule increased)	1.008	1.001-1.014	0.017*	1.006	0.999-1.012	0.080
Age (per 1 year increased)	1.027	1.015-1.039	<0.001*	1.033	1.019-1.046	<0.001*
Sex						
Male	Reference			Reference		
Female	0.625	0.491-0.795	<0.001*	1.249	0.884-1.765	0.207
Smoking History						
No	Reference			Reference		
Yes	1.931	1.521-2.451	<0.001*	1.157	0.817-1.637	0.412
Comorbid Conditions						
No	Reference					
Yes	1.098	0.860-1.401	0.453			
Surgical Approach						
VATS	Reference			Reference		
Non-VATS	1.369	2.910-5.313	<0.001*	1.521	1.086-2.130	0.015*
Surgical Procedure						
Sublobar Resection	Reference			Reference		
Non-Sublobar Resection	3.601	2.401-5.400	<0.001*	1.516	0.983-2.338	0.060
Histologic Type						
Adenocarcinoma	Reference			Reference		
Non-Adenocarcinoma	2.416	1.872-3.117	<0.001*	1.070	0.773-1.482	0.682
Postoperative Complications						
No	Reference					
Yes	1.225	0.701-2.139	0.476			
Adjuvant Therapy						
No	Reference			Reference		
Yes	4.162	3.277-5.287	<0.001*	1.330	0.987-1.793	0.061
AJCC 8th edition, T stage						
T1	Reference			Reference		
T2	3.449	2.602-4.573	<0.001*	1.781	1.304-2.431	<0.001*
T3	8.036	5.603-11.525	<0.001*	3.568	2.386-5.334	<0.001*
T4	10.735	6.571-17.537	<0.001*	3.861	2.245-6.641	<0.001*
AJCC 8th edition, N stage						
N0	Reference			Reference		
N1	4.988	3.570-6.969	<0.001*	2.852	1.941-4.190	<0.001*
N2	7.501	5.760-9.769	<0.001*	4.269	3.113-5.855	<0.001*
Overall survival (OS)						
TNN (per 1 nodule increased)	1.006	0.999-1.012	0.099	1.002	0.995-1.009	0.590
Age (per 1 year increased)	1.048	1.035-1.062	<0.001*	1.057	1.042-1.072	<0.001*
Sex						
Male	Reference			Reference		
Female	0.432	0.331-0.564	<0.001*	0.961	0.665-1.388	0.830
Smoking History						
No	Reference			Reference		
Yes	2.581	2.007-3.319	<0.001*	1.348	0.945-1.924	0.100
Comorbid Conditions						
No	Reference					
Yes	1.182	0.915-1.527	0.200			
Surgical Approach						
VATS	Reference			Reference		
Non-VATS	4.050	3.023-5.426	<0.001*	1.827	1.312-2.545	<0.001*
Surgical Procedure						
Sublobar Resection	Reference			Reference		
Non-Sublobar Resection	2.419	1.629-3.594	<0.001*	1.089	0.711-1.668	0.696
Histologic Type						
Adenocarcinoma	Reference			Reference		
Non-Adenocarcinoma	2.936	2.275-3.790	<0.001*	1.380	1.001-1.903	0.049*
Postoperative Complications						
No	Reference					
Yes	1.349	0.785-2.321	0.279			
Adjuvant Therapy						
No	Reference			Reference		
Yes	2.337	1.816-3.007	<0.001*	0.890	0.659-1.201	0.444
AJCC 8th edition, T stage						
T1	Reference			Reference		
T2	2.666	1.973-3.602	<0.001*	1.455	1.045-2.025	0.027*
T3	6.839	4.720-9.908	<0.001*	2.900	1.922-4.374	<0.001*
T4	11.987	7.548-19.037	<0.001*	4.537	2.700-7.623	<0.001*
AJCC 8th edition, N stage						
N0	Reference			Reference		
N1	3.621	2.536-5.171	<0.001*	2.632	1.772-3.910	<0.001*
N2	5.490	4.162-7.242	<0.001*	4.325	3.124-5.988	<0.001*

HR, hazard ratio; CI, confidence interval; TNN, total nodule number; VATS, video-assisted thoracoscopic surgery; AJCC, American Joint Committee on Cancer; *, statistical significance.
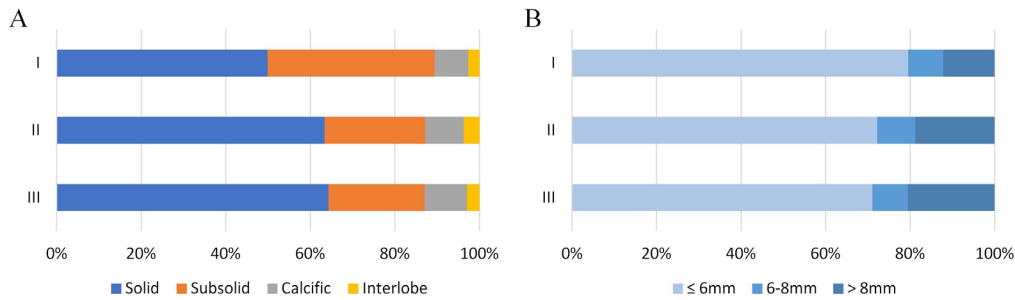
Figure S1 Bar chart showing the percentage of AI-detected nodule categories stratified by pathological stage. (A) nodule type, (B) solid nodule size. AI, artificial intelligence.
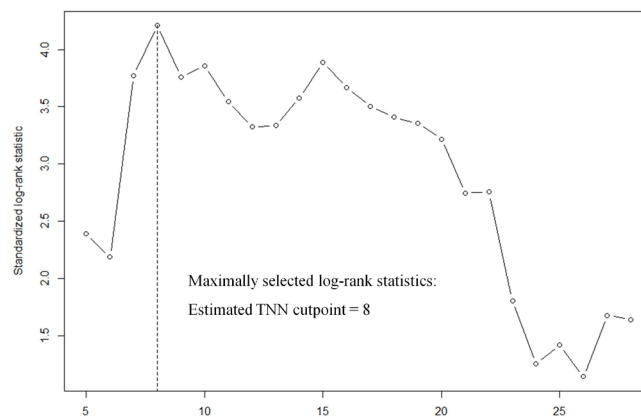

Figure S2 Maximally selected log-rank statistics showing the optimal cutoff value of AI-detected TNN for predicting overall survival. The optimal cutoff value of 8 was selected. AI, artificial intelligence; TNN, total nodule number.
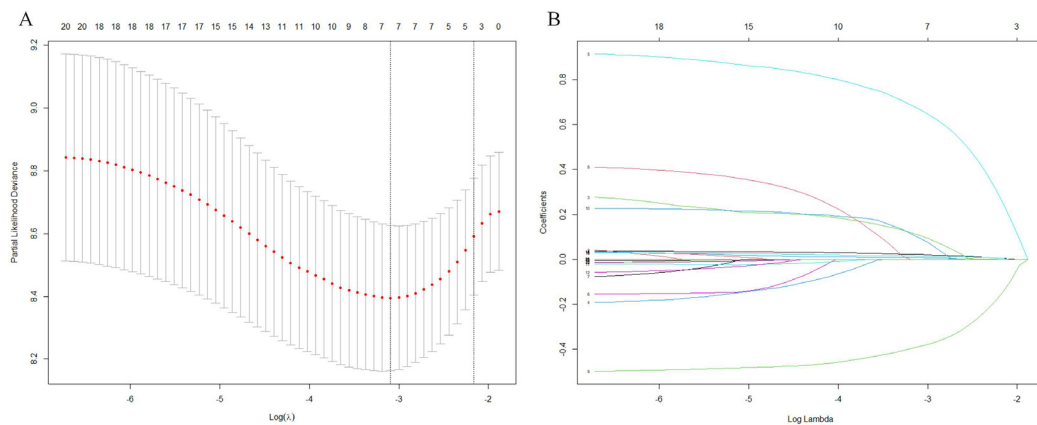

Figure S3 Feature selection with LASSO. LASSO Cox regression model was built with both clinicopathologic characteristics and all categories of AI-detected nodule numbers (as continuous variables). (A) Red dots indicated average deviance values for each model with a given λ; the dotted vertical lines were drawn at the optimal values by using the minimum mean square error (MSE) criteria. The optimal λ value of 0.0453 was selected. (B) The process of feature selection and resulting features with nonzero coefficients were indicated in the plot. LASSO, least absolute shrinkage and selection operator; AI, artificial intelligence.
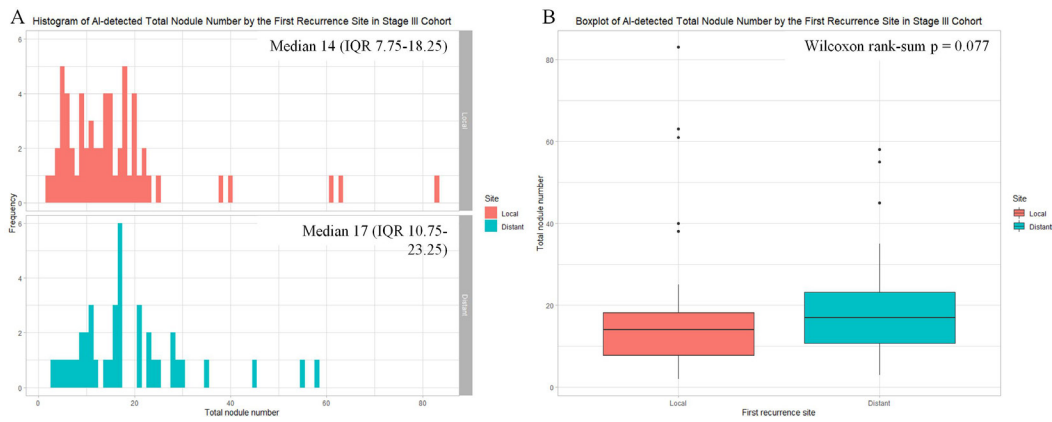
Figure S4 AI-detected TNN stratified by recurrence pattern in stage III cohort. (A) histograms showing the frequency distribution, (B) boxplots showing the central tendency. AI, artificial intelligence; TNN, total nodule number; IQR, interquartile range.
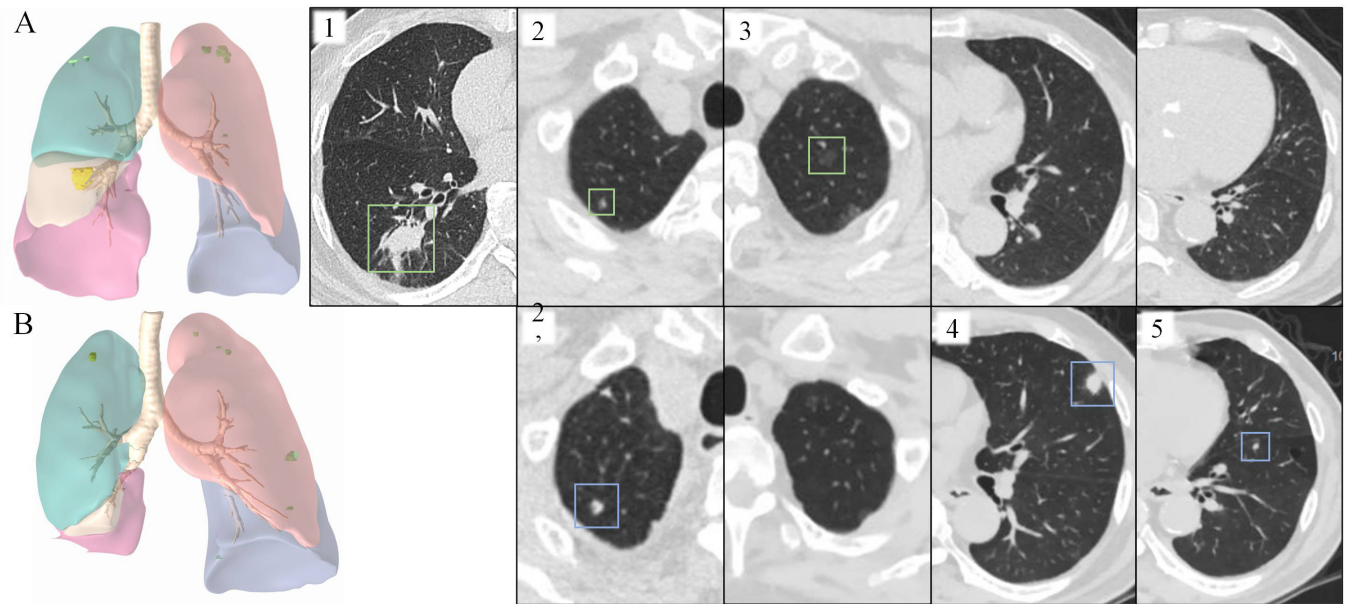

Figure S5 A case report: 80-year-old male underwent right lower lobe lobectomy and diagnosed with pathologic stage IIIA lung adenocarcinoma. (A) Preoperative chest CT showed the primary tumor at right lower lobe (#1); a small solid nodule with benign-looking radiological features at right upper lobe (#2), which also exhibited no FDG uptake on PET-CT; and a pure GGN at left upper lobe (#3). (B) Postoperative follow-up chest CT showed the growth of right upper lobe nodule (#2 to #2'), which indicated its malignancy; and the occurrence of new solid nodules at left upper lobe (#4) and left lower lobe (#5), which suggested intrapulmonary metastases. CT, computed tomography; FDG, fluorodeoxyglucose; PET, positron emission tomography; GGN, ground-glass nodule.