Figure S1 Visualization of missing data intersections across multiple variables. This plot presents a 2D bar chart depicting the intersection sizes of missing data across five variables: Postoperative_complications_NA, Comorbidities_NA, Family_history_NA, Smoking_index_NA, and Smoking_cessation_NA. The vertical bars on the right show the number of observations with missing values for combinations of variables, with the height of each bar indicating the frequency of missing value intersections. The horizontal section at the bottom displays the set sizes for each variable, along with dots and connecting lines that represent the pattern of missing data for each combination of variables. 2D, two-dimensional.

Table S1 T and N stage distribution for stage III patients

T & N stage	Number (n=37)
T	
T1a	1
T1b	2
T1c	3
T2a	14
T2b	3
T3	14
N	
N1	12
N2	25

Table S2 Univariate Cox regression analysis of OS

Variables	HR	95% CI	P value
Chemotherapy	0.36	0.21–0.62	<0.001
Smoking index	1.0010	1.0004–1.0016	<0.001
PCI	0.24	0.07–0.77	0.02
Age	1.03	1.00–1.06	0.02
Stage III	2.06	1.06–4.00	0.03
N+	1.84	1.05–3.23	0.03
Neoadjuvant chemotherapy	0.52	0.26–1.07	0.08
T (T1c)	6.22	0.80–48.28	0.08
Comorbidities	0.70	0.41–1.19	0.19
Gender (male)	1.59	0.77–3.26	0.21
T (T3)	3.29	0.41–26.32	0.26
Postoperative radiotherapy	0.66	0.30–1.46	0.30
T (T2a)	2.87	0.38–21.52	0.30
Family history	0.69	0.34–1.42	0.32
Smoking cessation (not involved)	0.68	0.31–1.46	0.32
T (T2b)	2.20	0.26–18.83	0.47
Smoking history	1.24	0.69–2.22	0.48
Smoking cessation	0.79	0.39–1.59	0.50
Stage II	1.26	0.64–2.51	0.50
Tumor size	1.04	0.91–1.19	0.55
T (T1b)	1.75	0.22–14.21	0.60
Postoperative complications	0.88	0.48–1.59	0.66
Surgical history	1.13	0.65–1.95	0.67
ICU	0.88	0.46–1.68	0.70
Vascular cancer thrombus	1.17	0.50–2.74	0.71
Symptoms at presentation	0.91	0.53–1.57	0.74
Thoracoscopy	0.95	0.55–1.63	0.86
Stump condition (R1)	1.07	0.26–4.40	0.93

CI, confidence interval; HR, hazard ratio; ICU, intensive care unit; OS, overall survival; PCI, prophylactic cranial irradiation.

Table S3 Univariate Cox regression analysis of DFS

Variables	HR	95% CI	P value
N+	2.16	1.27–3.67	0.004
Neoadjuvant chemotherapy	0.37	0.18–0.79	0.01
Stage II	1.85	0.98–3.49	0.057
Chemotherapy	0.57	0.32–1.02	0.057
Stage III	1.75	0.91–3.38	0.10
T (T1c)	3.36	0.75–14.95	0.11
Vascular cancer thrombus	0.41	0.13–1.32	0.14
Tumor size	1.09	0.97–1.22	0.16
Family history	1.48	0.83–2.62	0.18
Postoperative radiotherapy	0.64	0.32–1.30	0.22
Smoking Index	1.00	1.00–1.00	0.25
PCI	0.65	0.31–1.37	0.26
T (T3)	2.28	0.50–10.29	0.28
Smoking cessation	0.70	0.35–1.38	0.30
Thoracoscopy	0.78	0.47–1.30	0.35
Postoperative complications	0.77	0.43–1.38	0.38
Comorbidities	0.82	0.49–1.37	0.45
ICU	0.82	0.44–1.52	0.53
Symptoms at presentation	0.85	0.51–1.42	0.54
T (T1b)	0.62	0.12–3.07	0.56
Smoking history	0.87	0.51–1.49	0.62
T (T2a)	1.34	0.31–5.78	0.69
Surgical history	0.90	0.53–1.53	0.70
Smoking cessation (not involved)	0.88	0.43–1.80	0.73
Age	1.00	0.98–1.03	0.83
Gender (male)	1.05	0.57–1.91	0.88
T (T2b)	0.89	0.17–4.57	0.88
Stump condition (R1)	0.95	0.23–3.91	0.95

CI, confidence interval; DFS, disease-free survival; HR, hazard ratio; ICU, intensive care unit; PCI, prophylactic cranial irradiation.
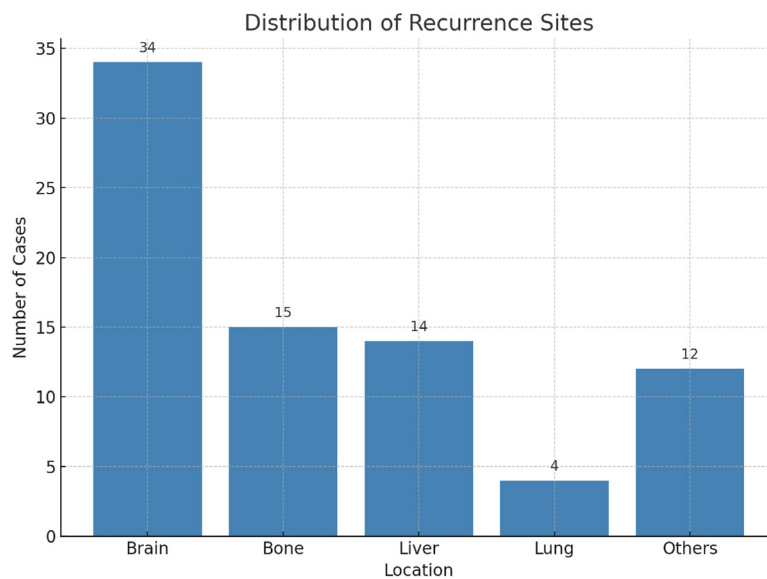
Figure S2 Distribution of recurrence sites. Bar plot showing the distribution of recurrence sites among patients who developed postoperative recurrence or metastasis. The most common site of recurrence was the brain (n=34), followed by bone (n=15), liver (n=14), and others (n=12). Pulmonary recurrence was relatively rare (n=4).
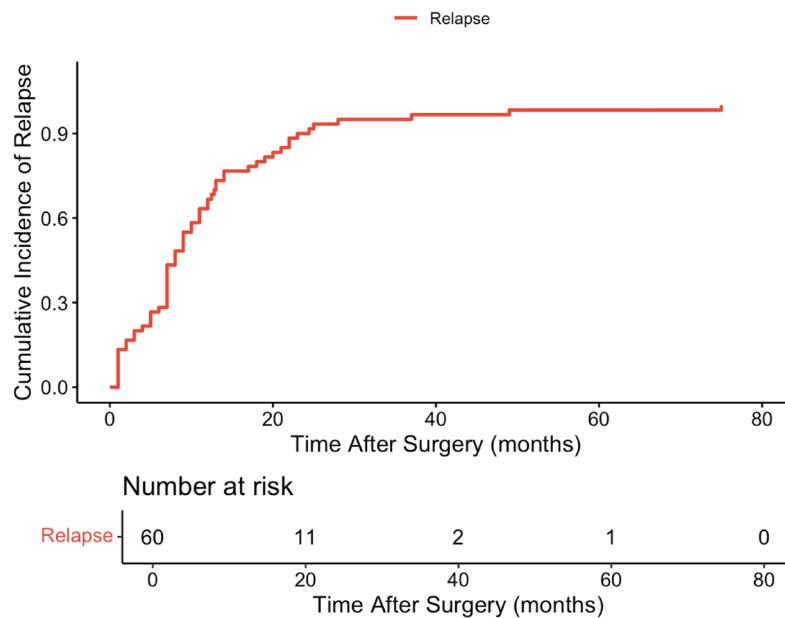
Figure S3 Cumulative incidence curve of postoperative relapse. Cumulative incidence curve illustrating the time-to-relapse distribution among patients after surgical resection.