

Figure S1 Correlation between radiological shrinkage and pathological regression. Spearman correlation was used to measure the relevance.

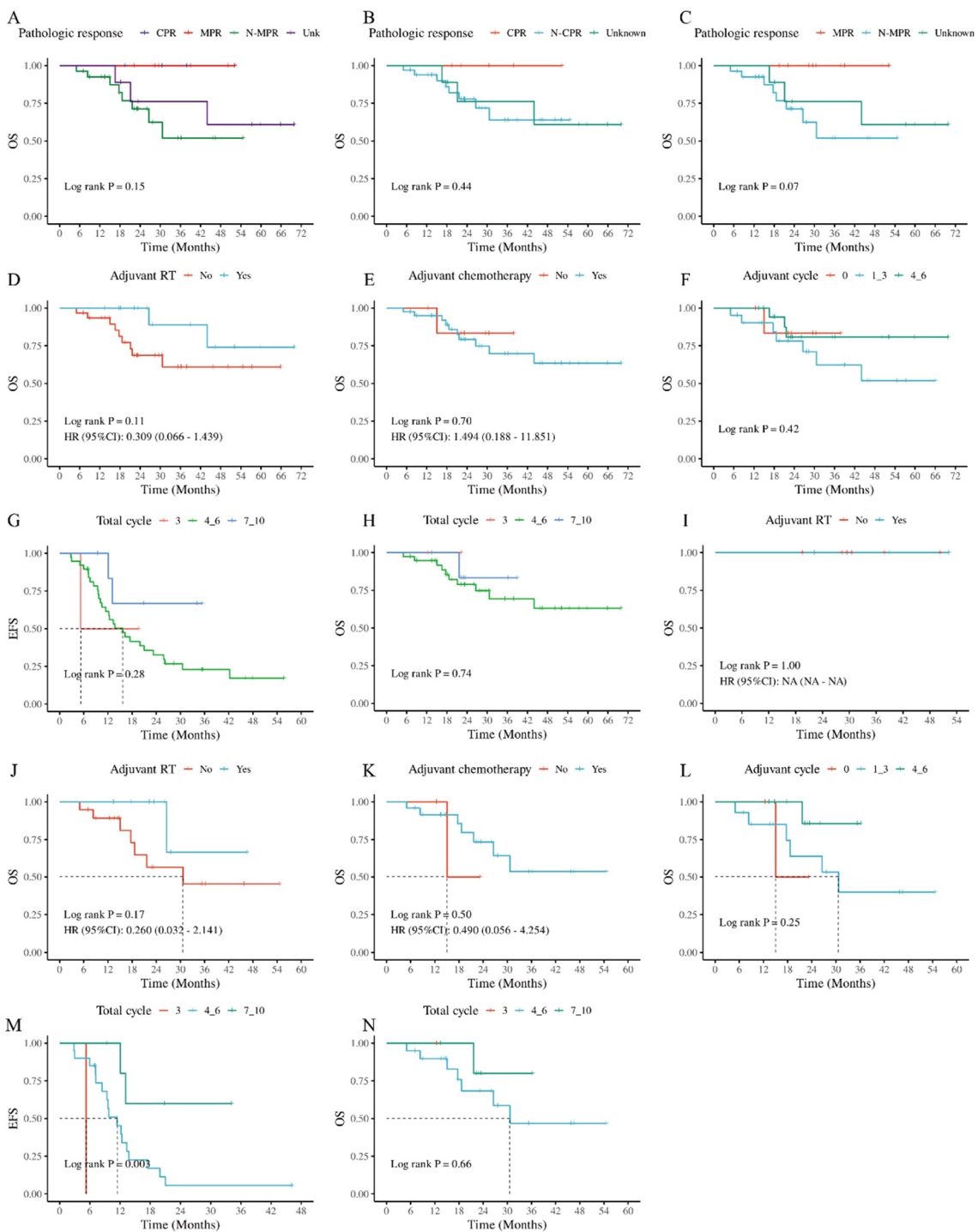


Figure S2 OS analysis based on pathologic response and adjuvant therapy. (A) Kaplan-Meier estimates of the duration of OS among the CPR, the MPR (excluding CPR), and the N-MPR. (B) Kaplan-Meier estimates of the duration of OS between the CPR and the N-CPR. (C) Kaplan-Meier estimates of the duration of OS between the MPR (including CPR) and the N-MPR. (D) A comparison of OS based on adjuvant radiotherapy in overall patients. (E) A comparison of OS based on adjuvant chemotherapy in overall patients. (F) A comparison of OS based on adjuvant cycle in overall patients. (G) A comparison of EFS based on the total cycle of chemotherapy in the perioperative period in overall patients. (H) A comparison of OS based on the total cycle of chemotherapy in the perioperative period in overall patients. (I) A comparison of OS based on adjuvant radiotherapy in patients achieving MPR. (J) A comparison of OS based on adjuvant radiotherapy in patients not achieving MPR. (K) A comparison of OS based on adjuvant chemotherapy in patients not achieving MPR. (L) A comparison of OS based on adjuvant cycle in patients not achieving MPR. (M) A comparison of EFS based on the total cycle of chemotherapy in the perioperative period in patients not achieving MPR. (N) A comparison of OS based on the total cycle of chemotherapy in the perioperative period in patients not achieving MPR. CI, confidence interval; CPR, complete pathological response; EFS, event-free survival; HR, hazard ratio; MPR, major pathological response; N-MPR, non-major pathological response; NA, not available; OS, overall survival; RT, radiotherapy.

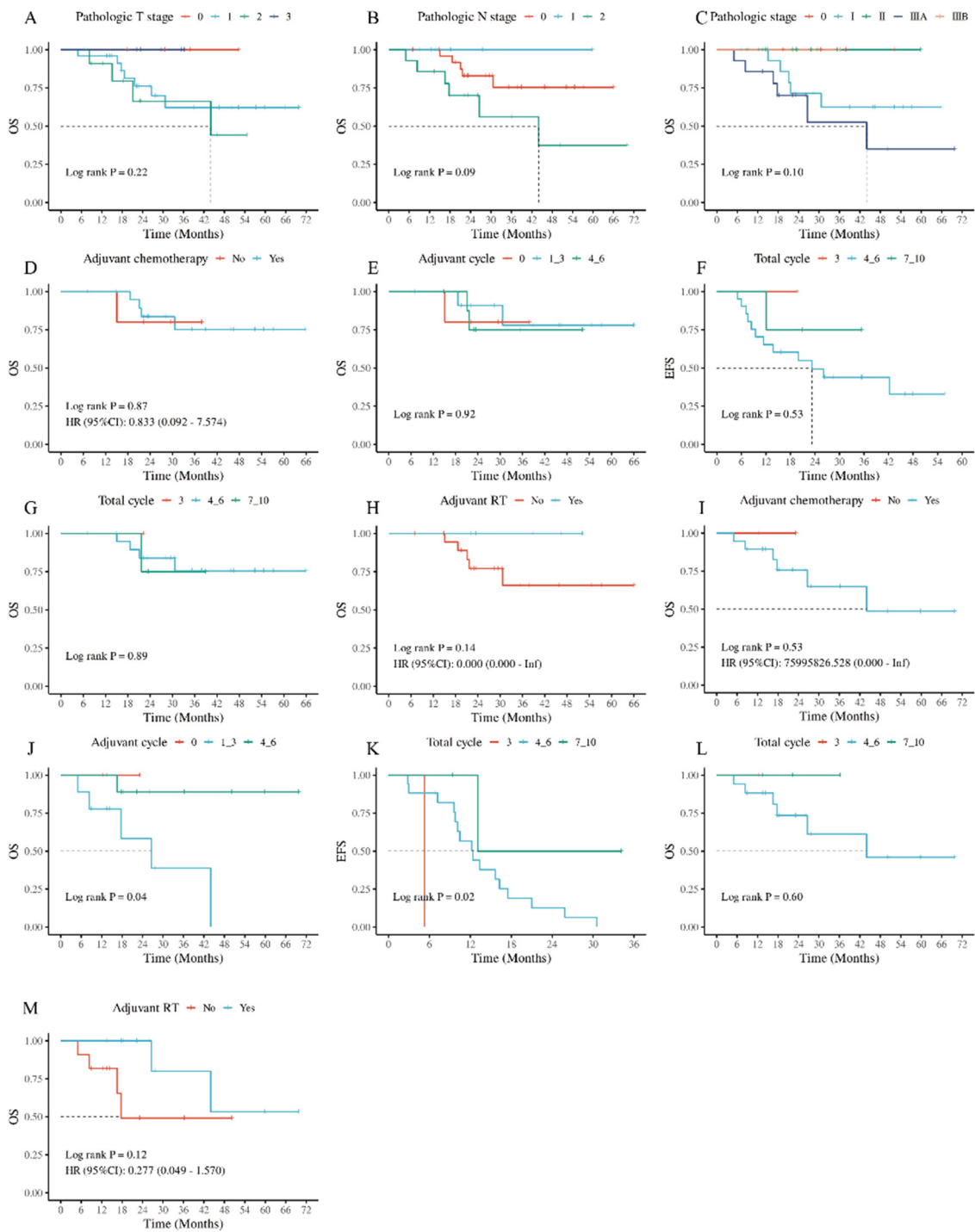


Figure S3 OS analysis based on pathologic stage and adjuvant therapy. (A) A comparison of OS based on pathological T stage in overall patients. (B) A comparison of OS based on pathological N stage in overall patients. (C) A comparison of OS based on comprehensive pathological staging in overall patients. (D) A comparison of OS based on adjuvant chemotherapy in patients with pathologically negative lymph node. (E) A comparison of OS based on adjuvant cycle in patients with pathologically negative lymph node. (F) A comparison of EFS based on the total cycle of chemotherapy in the perioperative period in patients with pathologically negative lymph node. (G) A comparison of OS based on the total cycle of chemotherapy in the perioperative period in patients with pathologically negative lymph node. (H) A comparison of OS based on adjuvant radiotherapy in patients with pathologically negative lymph node. (I) A comparison of OS based on adjuvant chemotherapy in patients with pathologically positive lymph node. (J) A comparison of OS based on adjuvant cycle in patients with pathologically positive lymph node. (K) A comparison of EFS based on the total cycle of chemotherapy in the perioperative period in patients with pathologically positive lymph node. (L) A comparison of OS based on the total cycle of chemotherapy in the perioperative period in patients with pathologically positive lymph node. (M) A comparison of OS based on adjuvant radiotherapy in patients with pathologically positive lymph node. CI, confidence interval; EFS, event-free survival; HR, hazard ratio; Inf, infinity; OS, overall survival; RT, radiotherapy.

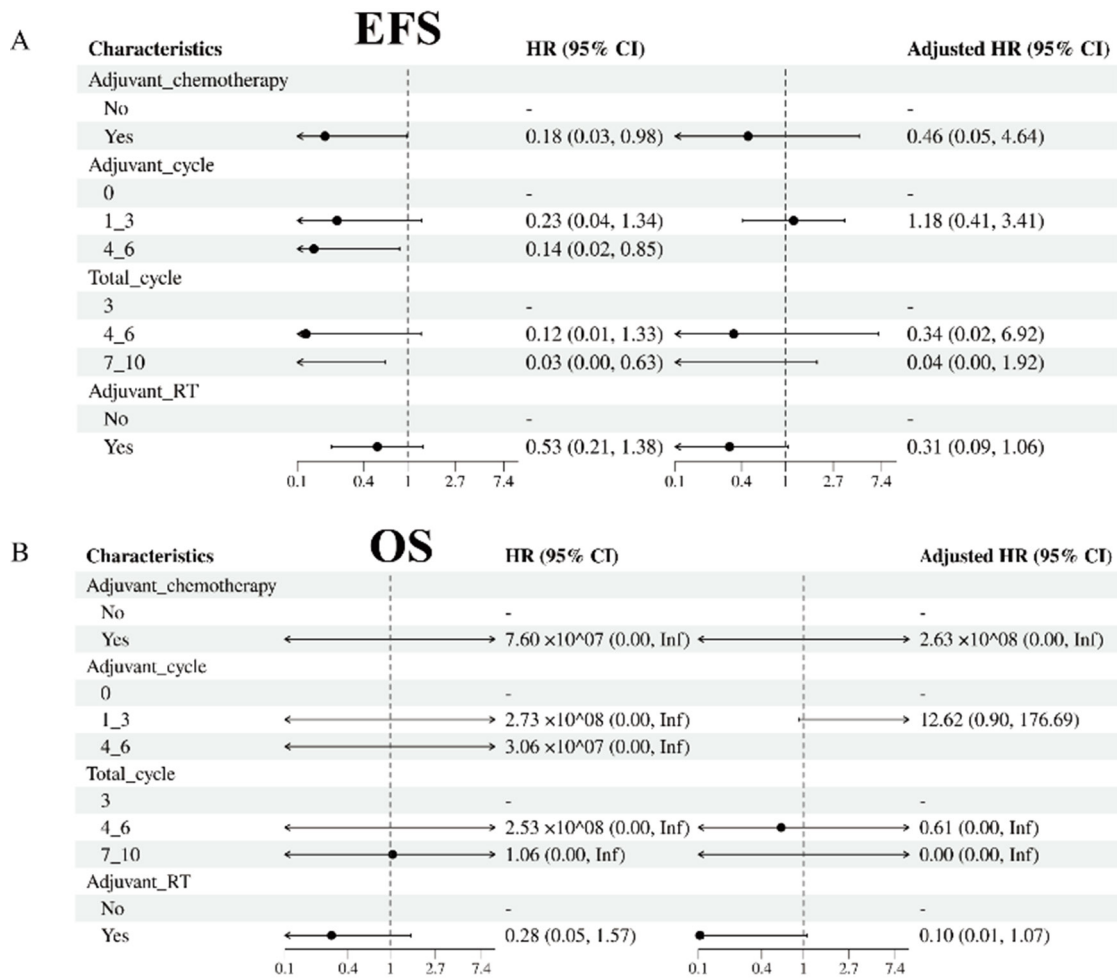


Figure S4 Univariate and multivariate Cox regression analysis of survival in patients with pathologically positive lymph node. (A) Univariate and multivariate Cox regression analysis of EFS across subgroups defined by various clinicopathologic characteristics, such as adjuvant chemotherapy, adjuvant cycle, total cycle, and adjuvant radiotherapy in patients with pathologically positive lymph node. (B) Univariate and multivariate Cox regression analysis of OS across subgroups defined by various clinicopathologic characteristics, such as adjuvant chemotherapy, adjuvant cycle, total cycle, and adjuvant radiotherapy in patients with pathologically positive lymph node. CI, confidence interval; EFS, event-free survival; HR, hazard ratio; Inf, infinity; OS, overall survival; RT, radiotherapy.

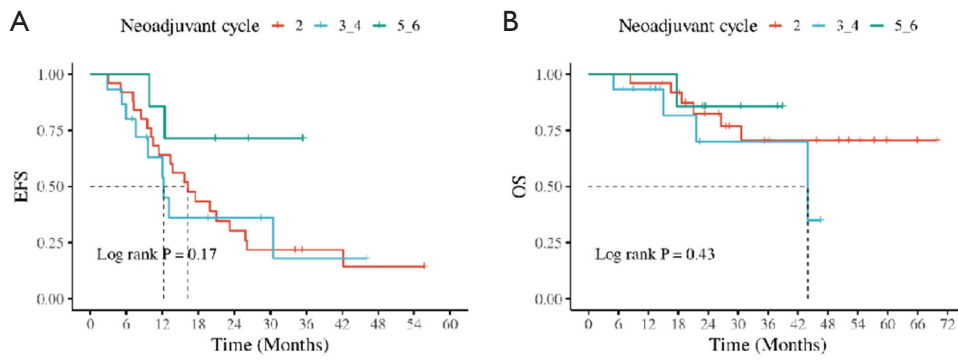


Figure S5 Subgroup survival analysis based on neoadjuvant chemotherapy cycles. (A) Comparison of EFS based on neoadjuvant chemotherapy cycles. (B) Comparison of OS based on neoadjuvant chemotherapy cycles. EFS, event-free survival; OS, overall survival.

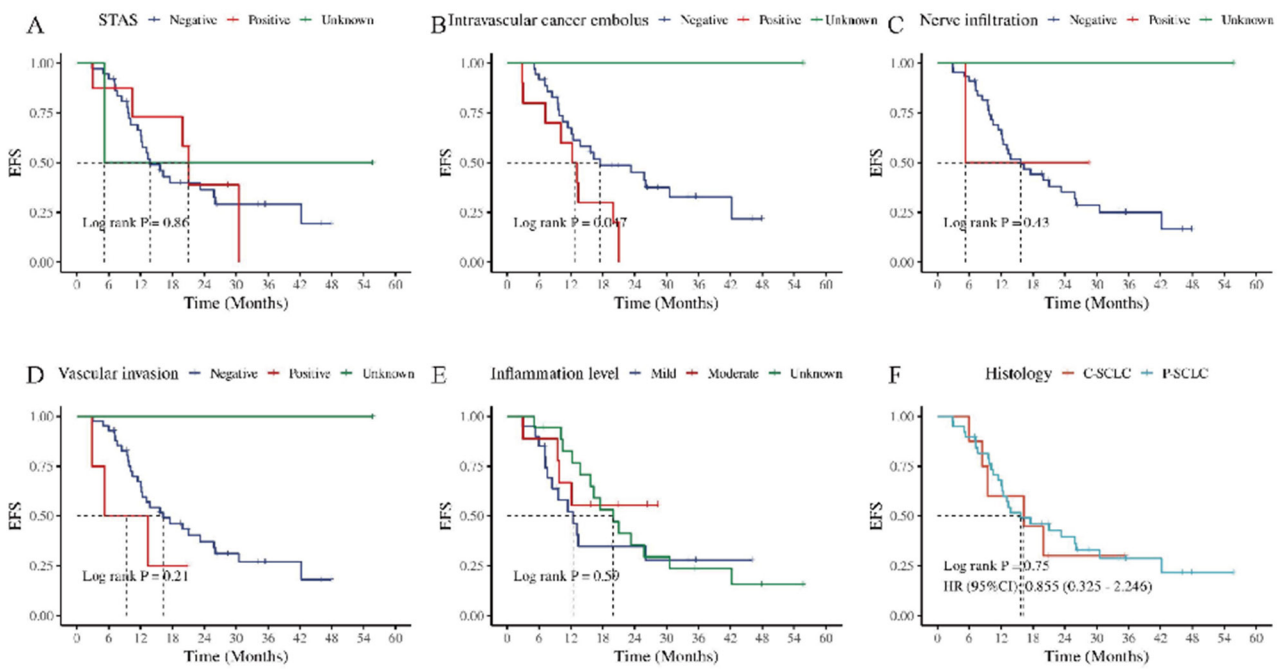


Figure S6 EFS analysis based on factors in pathology reports. (A) A comparison of EFS based on status of STAS. (B) A comparison of EFS based on status of intravascular cancer embolus. (C) A comparison of EFS based on status of nerve infiltration. (D) A comparison of EFS based on status of vascular invasion. (E) A comparison of EFS based on inflammation levels. (F) A comparison of EFS based on pathological subtypes. EFS, event-free survival; STAS, spread through air spaces.

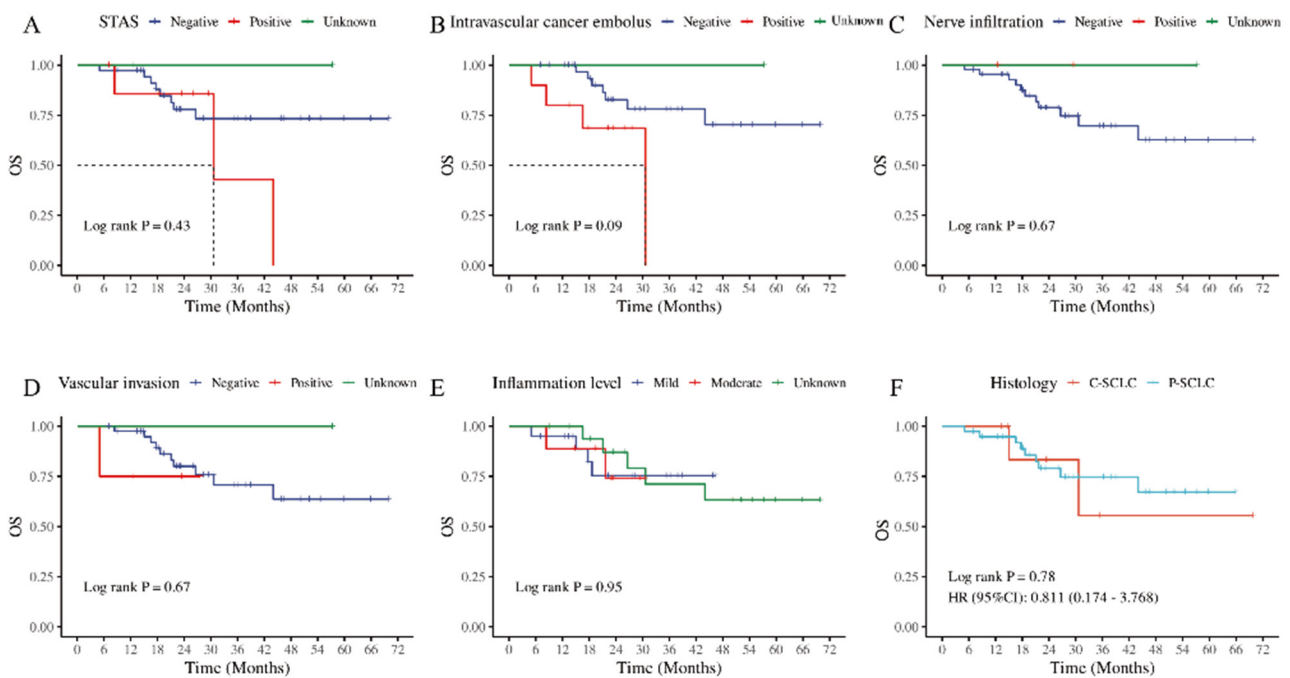


Figure S7 OS analysis based on factors in pathology reports. (A) A comparison of OS based on status of STAS. (B) A comparison of OS based on status of intravascular cancer embolus. (C) A comparison of OS based on status of nerve infiltration. (D) A comparison of OS based on status of vascular invasion. (E) A comparison of OS based on inflammation levels. (F) A comparison of OS based on pathological subtypes. C-SCLC, combined small cell lung cancer; OS, overall survival; P-SCLC, pure small cell lung cancer; STAS, spread through air spaces.

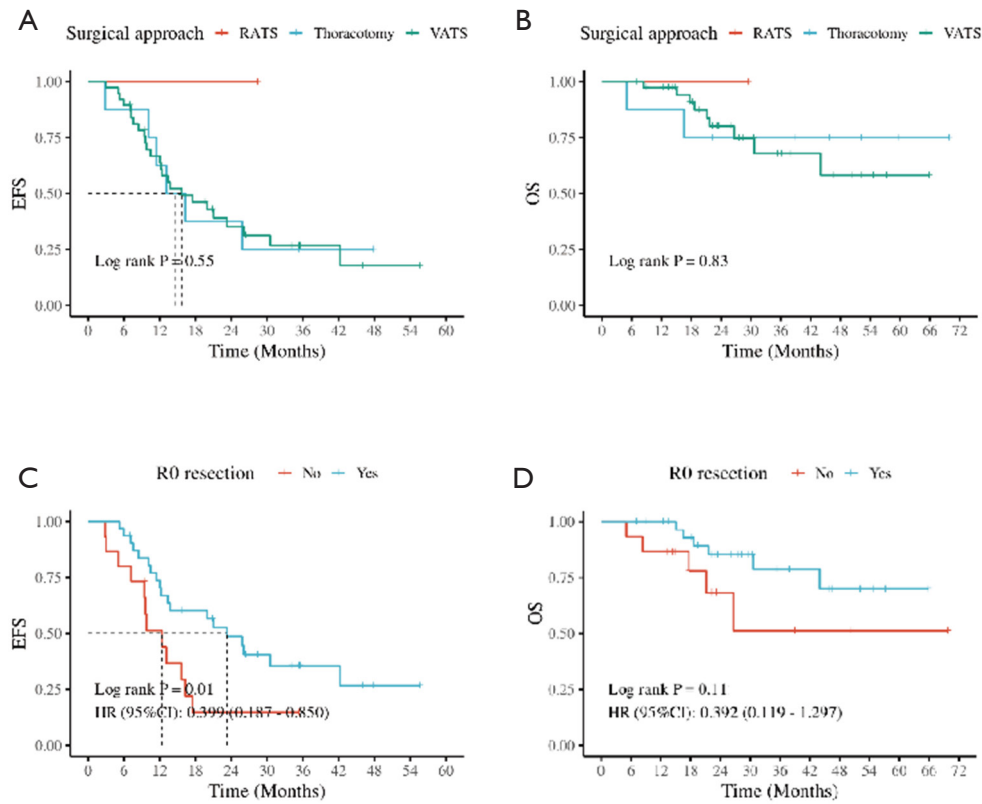


Figure S8 Survival analysis based on surgery. (A) A comparison of EFS based on surgical approach. (B) A comparison of OS based on surgical approach. (C) A comparison of EFS based on R0 resection. (D) A comparison of OS based on R0 resection. CI, confidence interval; EFS, event-free survival; HR, hazard ratio; OS, overall survival; RATS, robotic-assisted thoracoscopic surgery; VATS, video-assisted thoracoscopic surgery.

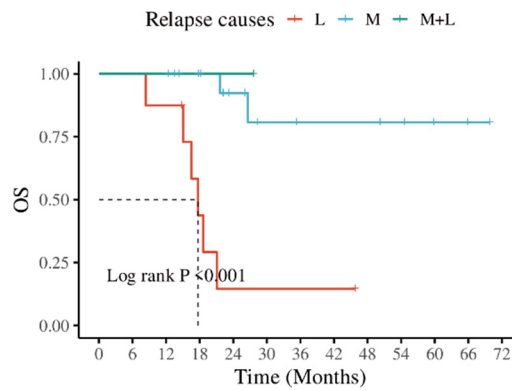


Figure S9 Survival analysis based on relapse reason. L, local recurrence; M, distant metastasis; M + L, distant metastasis + local recurrence; OS, overall survival.

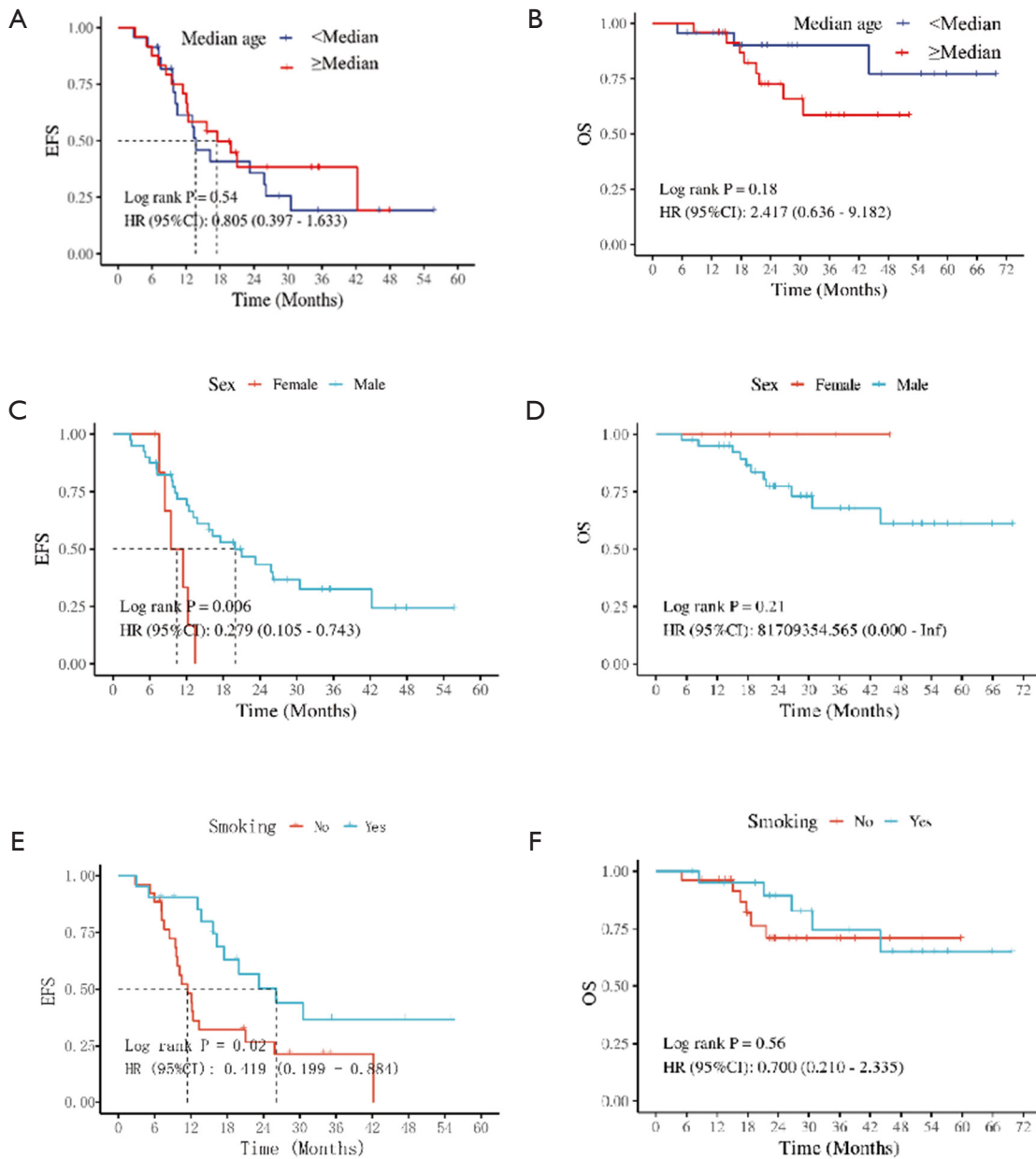


Figure S10 Survival analysis based on baseline characteristics. (A) A comparison of EFS based on median age. (B) A comparison of OS based on median age. (C) A comparison of EFS based on sex. (D) A comparison of OS based on sex. (E) A comparison of EFS based on smoking history. (F) A comparison of OS based on smoking history. CI, confidence interval; EFS, event-free survival; HR, hazard ratio; Inf, infinity; OS, overall survival.

Table S1 Summary of inclusion and exclusion criteria

Criteria type	Description
Inclusion criteria	(I) Individuals over the age of 18 years with histologically or cytologically confirmed SCLC or C-SCLC; (II) clinical stages diagnosed as limited stage but excluding N3 stage according to the American Joint Committee on Cancer staging criteria (8 th edition); (III) all patients were treatment-naïve, received at least one cycle of neoadjuvant chemotherapy during the preoperative treatment period, and underwent surgery; and (IV) medical information, encompassing baseline data, safety records, surgical and postoperative pathological documentation, as well as clinical outcomes, was accessible and traceable
Exclusion criteria	(I) Patients who have undergone other antitumor treatments before surgery, except for chemotherapy, are ineligible; (II) patients with a second primary tumor requiring treatment; and (III) patients who had enrolled in prospective clinical trials

C-SCLC, combined small cell lung cancer; SCLC, small cell lung cancer.

Table S2 The definition of complete resection (R0) of lung cancer

Description
(I) negative surgical margins encompassing bronchial, arterial, venous, peribronchial, and tumor-adjacent tissues; (II) a thorough dissection of lymph nodes was conducted, encompassing no fewer than six different stations, with a minimum of three stations from the pulmonary field and three from the mediastinal region, ensuring the inclusion of station 7; (III) ensuring microscopic negativity in the highest resected lymph node; and (IV) confirming no extra-nodal invasion of the lymph node.

Table S3 Details of the neoadjuvant chemotherapy

Variables	Data (n=47)
Neoadjuvant regimens	
AC	2 (4.26)
EC	19 (40.43)
EL	3 (6.38)
EN	13 (27.66)
EP	8 (17.02)
IP	1 (2.13)
PC	1 (2.13)
Neoadjuvant cycle	
2	25 (53.19)
3	11 (23.40)
4	4 (8.51)
5	4 (8.51)
6	3 (6.38)
Interval from neoadjuvant chemotherapy completion to surgery (days)	33.00 (25.00, 62.75)

Data are presented as median (IQR) or n (%). AC, abraxane + carboplatin; EC, etoposide + carboplatin; EL, etoposide + lobaplatin; EN, etoposide + nedaplatin; EP, etoposide + cisplatin; IP, irinotecan + cisplatin; PC, paclitaxel + carboplatin.

Table S4 Details of surgery

Variables	Data (n=47)
Time from surgery to adjuvant chemotherapy initiation (days)	38.00 (33.75, 47.00)
Surgery time (hours)	2.00 (1.56, 3.00)
Bleeding (mL)	50.00 (50.00, 115.00)
Residual viable tumor (%)	70.00 (8.00, 90.00)
Percentage of necrosis (%)	0.00 (0.00, 5.00)
Mesenchyme percentage (%)	20.00 (10.00, 70.00)
Extent of surgery	
Bilobectomy	6 (12.77)
Lobectomy	27 (57.45)
Lobectomy + segmentectomy	1 (2.13)
Pneumonectomy	1 (2.13)
Segmentectomy	2 (4.26)
Sleeve resection	9 (19.15)
Wedge resection	1 (2.13)
Surgical approach	
RATS	1 (2.13)
Thoracotomy	8 (17.02)
VATS	38 (80.85)
Transfusion	
No	43 (91.49)
Yes	4 (8.51)
Margin	
Negative	47 (100.00)
R0 resection	
No	15 (31.91)
Yes	32 (68.09)
Pathologic T stage	
0	5 (10.64)
1a	5 (10.64)
1b	13 (27.66)
1c	7 (14.89)
2a	10 (21.28)
2b	2 (4.26)
3	5 (10.64)
Pathologic N stage	
0	26 (55.32)
1	7 (14.89)
2	14 (29.79)
Pathologic stage	
0	5 (10.64)
IA1	1 (2.13)
IA2	6 (12.77)
IA3	4 (8.51)
IB	5 (10.64)
IIA	1 (2.13)
IIB	10 (21.28)
IIIA	14 (29.79)
IIIB	1 (2.13)
Inflammation level	
Mild	20 (42.55)
Moderate	9 (19.15)
Unknown	18 (38.30)
Pleural infiltration	
Negative	45 (95.74)
Unknown	2 (4.26)
Nerve infiltration	
Negative	44 (93.62)
Positive	2 (4.26)
Unknown	1 (2.13)
Intravascular cancer embolus	
Negative	36 (76.60)
Positive	10 (21.28)
Unknown	1 (2.13)
STAS	
Negative	37 (78.72)
Positive	8 (17.02)
Unknown	2 (4.26)
Vascular invasion	
Negative	42 (89.36)
Positive	4 (8.51)
Unknown	1 (2.13)

Data are presented as median (IQR) or n (%). IQR, interquartile range; RATS, robotic-assisted thoracoscopic surgery; VATS, video-assisted thoracoscopic surgery; STAS, spread through air spaces.

Table S5 Details of adjuvant chemotherapy

Variables	Data (n=47)
Adjuvant regimens	
No therapy	7 (14.89)
EC	15 (31.91)
EL	4 (8.51)
EN	12 (25.53)
EP	7 (14.89)
IP	1 (2.13)
PC	1 (2.13)
Adjuvant cycle	
0	7 (14.89)
1	3 (6.38)
2	11 (23.40)
3	7 (14.89)
4	18 (38.30)
6	1 (2.13)

Data are presented as n (%). EC, etoposide + carboplatin; EL, etoposide + lobaplatin; EN, etoposide + nedaplatin; EP, etoposide + cisplatin; IP, irinotecan + cisplatin; PC, paclitaxel + carboplatin.

Table S6 Details of adjuvant radiotherapy

Radiotherapy dose	Data (n=16)
50 Gy/25 F	14 (87.50)
60 Gy/30 F	2 (12.50)

Data are presented as n (%).

Table S7 Statistics on the total cycles of neoadjuvant and adjuvant chemotherapy for all patients

Total cycle	Data (n=47)
10	1 (2.13)
3	2 (4.26)
4	12 (25.53)
5	6 (12.77)
6	20 (42.55)
7	3 (6.38)
8	1 (2.13)
9	2 (4.26)

Data are presented as n (%).

Table S8 Statistics on radiologic and pathologic response

Response	Data (n=47)
Pathologic response 1	
MPR (including CPR)	11 (23.40)
N-MPR	27 (57.45)
Unknown	9 (19.15)
Pathologic response 2	
CPR	5 (10.64)
N-CPR	33 (70.21)
Unknown	9 (19.15)
Pathologic response 3	
CPR	5 (10.64)
MPR (excluding CPR)	6 (12.77)
N-MPR	27 (57.45)
Unknown	9 (19.15)
RECIST	
PR	33 (70.21)
SD	14 (29.79)

Data are presented as n (%). CPR, complete pathological response; MPR, major pathological response; N-MPR, non-major pathological response; N-CPR, non-complete pathological response; PR, partial response; RECIST, Response Evaluation Criteria in Solid Tumors; SD, stable disease.

Table S9 Pathologic response analyses based on the median time from the end of neoadjuvant chemotherapy to surgery

Pathologic response	Total (n=40)	< Median (n=19)	≥ Median (n=21)	P
MPR	4 (10.00)	3 (15.79)	1 (4.76)	0.44
N-MPR	27 (67.50)	11 (57.89)	16 (76.19)	
Unknown	9 (22.50)	5 (26.32)	4 (19.05)	

Data are presented as n (%). MPR, major pathological response; N-MPR, non-major pathological response.

Table S10 Pathologic response analyses based on the median time from surgery to the start of adjuvant therapy

Pathologic response	Total (n=40)	< Median (n=20)	≥ Median (n=20)	P
MPR	4 (10.00)	2 (10.00)	2 (10.00)	0.63
N-MPR	27 (67.50)	15 (75.00)	12 (60.00)	
Unknown	9 (22.50)	3 (15.00)	6 (30.00)	

Data are presented as n (%). MPR, major pathological response; N-MPR, non-major pathological response.

Table S11 Recurrence sites and patient numbers for distant metastasis group

Causes	Data (n=18)
Liver	1 (5.6)
Brain	7 (38.9)
Bone	2 (11.1)
Supraclavicular lymph nodes	2 (11.1)
Liver, brain	3 (16.7)
Liver, bone	1 (5.6)
Liver, pleura	1 (5.6)
Liver, bone	1 (5.6)

Data are presented as n (%).

Table S12 Treatment-related adverse events

Events	Neoadjuvant CT + surgery (n=47)				
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Treatment-related adverse events					
Any	42 (89.36)	15 (31.91)	8 (17.02)	2 (4.26)	0
Anemia	28 (59.57)	5 (10.64)	0	0	0
ALT/AST increased	17 (36.17)	0	0	0	0
γ-glutamyltransferase increased	14 (29.79)	2 (4.26)	1 (2.13)	0	0
Lymphocyte count decreased	9 (19.15)	1 (2.13)	0	0	0
White blood cell counts decreased	6 (12.77)	3 (6.38)	2 (4.26)	0	0
Decreased appetite	5 (10.64)	0	0	0	0
Constipation	5 (10.64)	0	0	0	0
Neutrophil count decreased	4 (8.51)	4 (8.51)	4 (8.51)	2 (4.26)	0
Platelet count decreased	4 (8.51)	0	4 (8.51)	0	0
Asthenia	3 (6.38)	0	0	0	0
Fatigue	3 (6.38)	0	0	0	0
Nausea	3 (6.38)	1 (2.13)	0	0	0
Vomiting	3 (6.38)	1 (2.13)	0	0	0
Diarrhea	2 (4.26)	0	0	0	0
Blood creatinine increased	1 (2.13)	0	0	0	0
Hypokalemia	1 (2.13)	0	0	0	0
Febrile neutropenia	0	0	1 (2.13)	0	0
Surgery-related adverse events					
Lung infection	5 (10.64)	0	0	0	0
Pulmonary embolism	1 (2.13)	0	0	0	0
Perioperative death	0	0	0	0	0
Postoperative pneumothorax	0	0	0	0	0

Data are presented as n (%). ALT, alanine aminotransferase; AST, aspartate aminotransferase; CT, computed tomography.