Figure S1 The inclusion criteria of Cancer Hospital, Chinese Academy of Medical Sciences and Beijing Chao-Yang Hospital, Capital Medical University, which served as the training set.
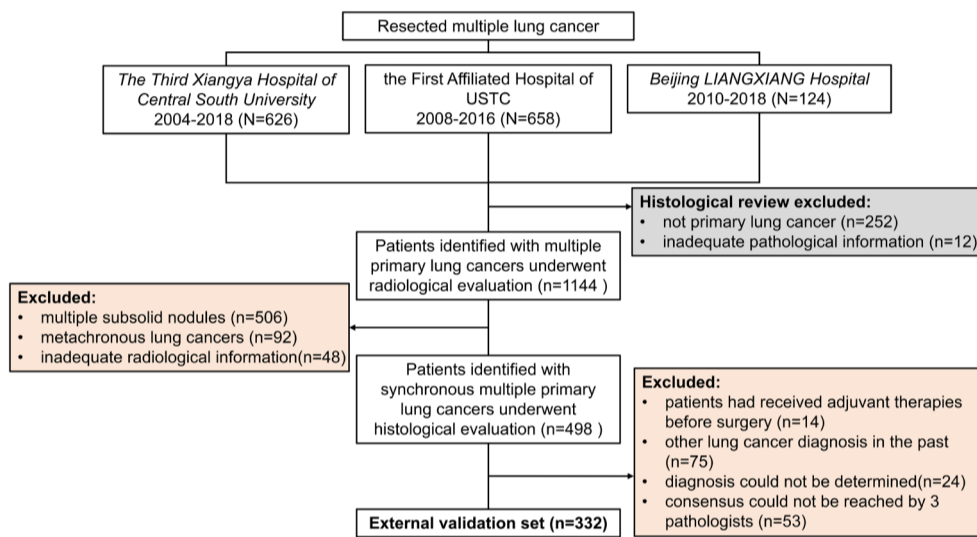

Figure S2 The inclusion criteria of The Third Xiangya Hospital of Central South University, the First Affiliated Hospital of University of Science and Technology of China, and Beijing Liangxiang Hospital, which served as the external validation set. USTC, University of Science and Technology of China.
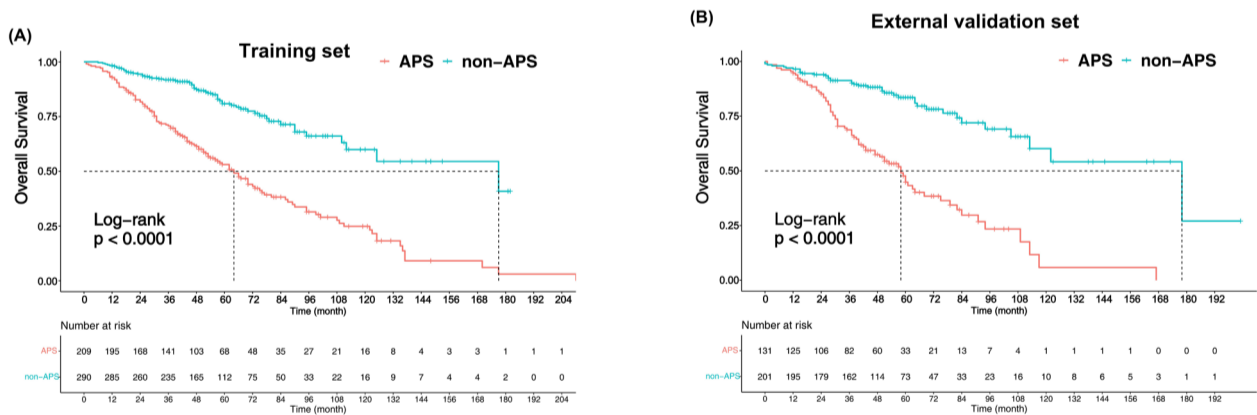

Figure S3 Kaplan-Meier survival curves, classified by the radiological grouping in training set (A) and external validation set (B). APS, all pure-solid tumors; non-APS, pure-solid tumor accompanied with tumors with additional ground-glass opacity (CTR, 0.25 to <1); CTR, consolidation-to-tumor ratio.
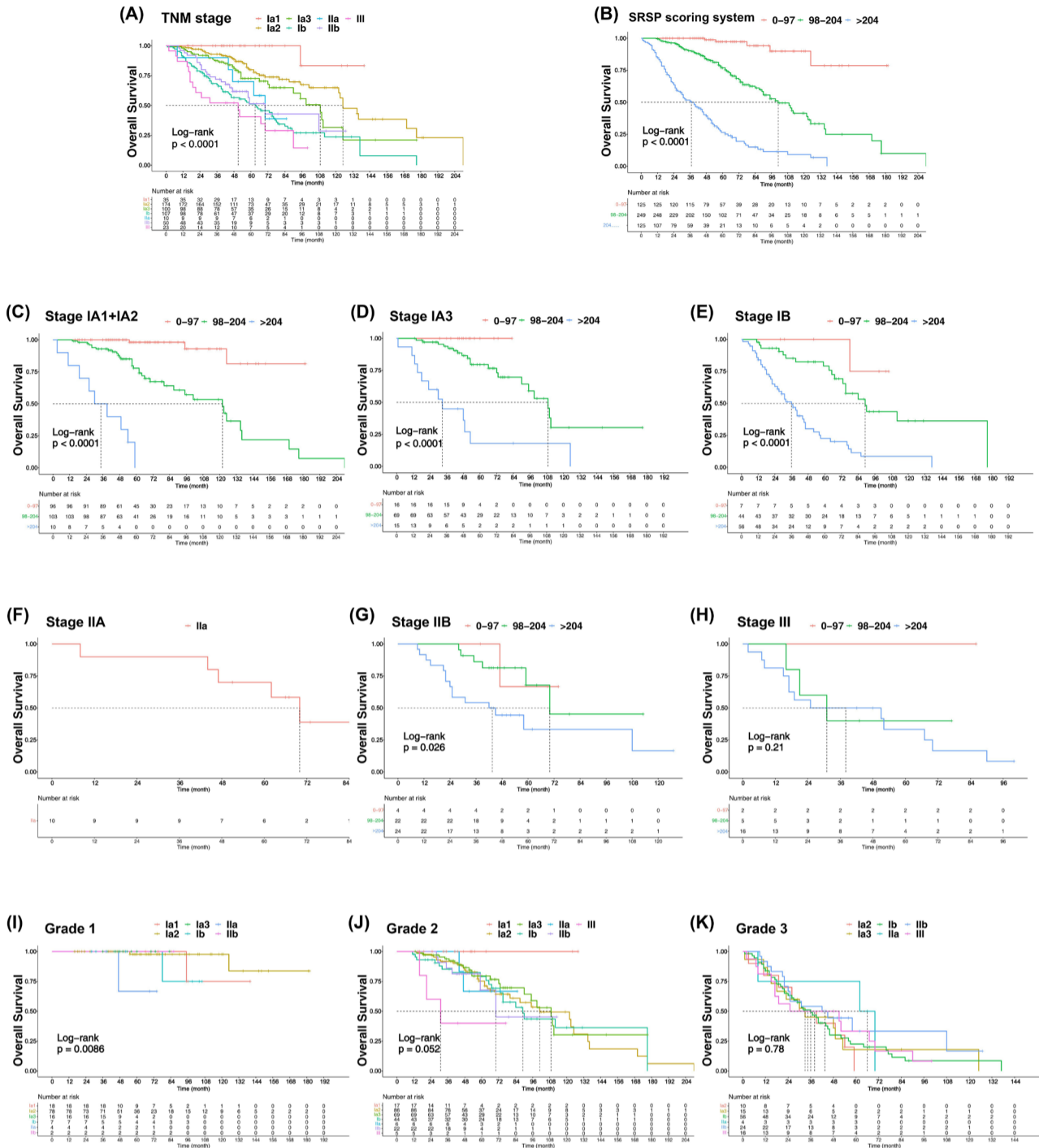
Figure S4 K-M curves for prognosis analysis of SMPLC patients. (A) K-M survival curves, classified by the highest tumor stage according to eighth editions of the TNM staging system in training set. (B) K-M survival curves, classified by our second primary lung cancer resection survival prediction scoring system (SRSP scoring system) in training set. (C-H) SRSP scoring system based-risk group stratification within each TNM stage in training set. (I-K) K-M survival curves, classified by highest tumor stage within each risk group. Subgroups with fewer than 15 patients were unstratified from the graphs. TNM, Tumor Node Metastasis; SRSP, SMPLC resection prediction; SMPLC, synchronous multiple primary lung cancer; K-M, Kaplan-Meier.

Table S1 Univariable analysis and Cox proportional hazards regression analysis

Variables	Multivariable analysis			AIC selected factors for building the model		
	Hazard ratio	95% CI	P value	Hazard ratio	95% CI	P value
Gender						
Male	Reference			Reference		
Female	0.66	0.40–1.08	0.10	0.69	0.44–1.08	0.10
Age (years)						
<60	Reference			Reference		
60–69	1.35	0.76–2.42	0.30	1.41	0.83–2.39	0.20
≥70	2.17	1.23–3.84	0.007	2.27	1.37–3.74	0.001
Lung disease						
No	Reference			Reference		
Yes	1.39	0.93–2.08	0.11	1.39	0.95–2.03	0.09
Smoke						
Never	Reference			Reference		
Ever	1.65	0.92–2.94	0.09	1.71	0.10–2.92	0.05
Surgical approach						
L&L	Reference			–	–	–
S&S	0.98	0.44–2.21	0.97	–	–	–
L&S	1.70	1.09–2.66	0.02	–	–	–
PN	0.99	0.34–2.86	0.99	–	–	–
Pathological type						
SC + SC	Reference			–	–	–
ADC + ADC	1.30	0.76–2.22	0.33	–	–	–
SC + ADC	0.97	0.50–1.89	0.93	–	–	–
SC + others	1.42	0.36–5.62	0.62	–	–	–
ADC + others	0.96	0.37–2.49	0.94	–	–	–
Pathology T stage (primary tumor)						
T1a+T1b	Reference			Reference		
T1c	1.36	0.77–2.40	0.29	1.35	0.80–2.28	0.26
T2a	2.18	1.34–3.55	0.002	2.07	1.30–3.28	0.002
T2b	6.07	2.48–14.88	<0.001	5.81	2.50–13.51	<0.001
≥ T3	2.24	0.86–5.81	0.10	2.47	0.98–6.20	0.06
Pathology T stage (secondary tumor)						
T1a	Reference			–	–	–
T1b	1.12	0.74–1.67	0.60	–	–	–
T1c	0.39	0.13–1.16	0.09	–	–	–
T2a	2.14	0.66–6.89	0.20	–	–	–
T2b	–	–	–	–	–	–
≥ T3	–	–	–	–	–	–
No. of cleaned LN stations						
<3	Reference			Reference		
3–5	0.65	0.32–1.30	0.22	0.62	0.34–1.13	0.12
≥6	0.25	0.12–0.53	<0.001	0.25	0.14–0.45	<0.001
Pathologic N stage						
N0	Reference			–	–	–
N1	1.06	0.48–2.36	0.88	–	–	–
N2	2.02	0.83–4.87	0.12	–	–	–

AIC, Akaike Information Criterion; CI, confidence interval; L&L, lobectomy was performed for both tumors; L&S, lobectomy was performed for the primary tumor and sublobar resection were performed for other tumors; S&S, sublobar resection were performed for all tumors; PN, pneumonectomy; SC, squamous cell carcinoma; ADC, adenocarcinoma; APS, all pure-solid tumors; non-APS, pure-solid tumor accompanied with tumors with additional GGO (CTR, 0.25 to <1); LN, lymph node; GGO, ground-glass opacity; CTR, consolidation-to-tumor ratio.