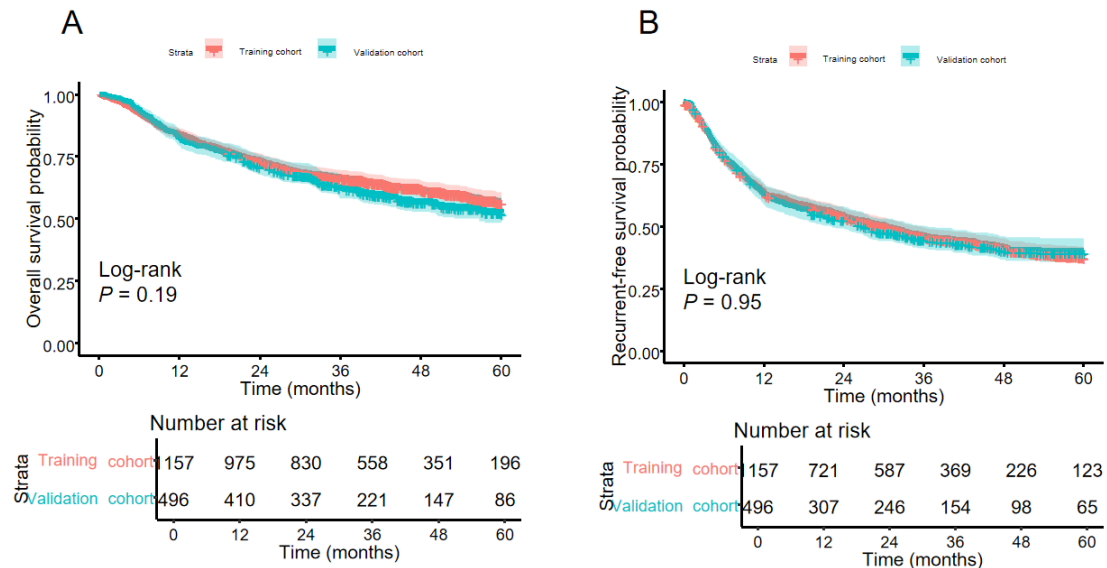


Supplementary Figure 1 Flow chart of patient screening.



Supplementary Figure 2 Kaplan-Meier curves on the data cohort. A: Overall survival; B: Recurrence-free survival prediction.

Supplementary Table 1 Baseline preoperative characteristics in the training data and validation data, n (%)

Characteristics	Cohort		P value
	Training ($n = 1157$)	Internal test ($n = 496$)	
Sex			0.750
Female	175 (15.1)	72 (14.5)	

Male	982 (84.9)	424 (85.5)	
Age, years			0.598
≤ 60	825 (71.3)	360 (72.6)	
> 60	332 (28.7)	136 (27.4)	
Hepatitis B surface antigen			0.139
Negative	174 (15.0)	89 (17.9)	
Positive	983 (85.0)	407 (82.1)	
Alpha-fetoprotein, ng/mL			0.114
< 400	970 (83.8)	400 (80.6)	
≥ 400	187 (16.2)	96 (19.4)	
Alanine transaminase, IU/L			0.488
< 40	845 (73.0)	354 (71.4)	
≥ 40	312 (27.0)	142 (28.6)	
Aspartate transaminase, IU/L			0.335
< 40	685 (59.2)	281 (56.7)	
≥ 40	472 (40.8)	215 (43.3)	
Prothrombin time, second			0.582
≤ 13	948 (81.9)	412 (83.1)	
> 13	209 (18.1)	84 (16.9)	
Albumin-bilirubin grade			0.776
1	893 (77.2)	386 (77.8)	
2	264 (22.8)	110 (22.2)	
Tumor diameter, cm			0.961
< 5	549 (47.5)	236 (47.6)	
≥ 5	608 (52.5)	260 (52.4)	
Number of tumors			0.579
Single	976 (84.4)	413 (83.3)	
Multiple	181 (15.6)	83 (16.7)	
Hypertension			0.904

No	977 (84.4)	420 (84.7)	
Yes	180 (15.6)	76 (15.3)	
Diabetes			0.202
No	1,056 (91.3)	462 (93.1)	
Yes	101 (8.7)	34 (6.9)	
Cardiovascular disease			0.903
No	1,137 (98.3)	487 (98.2)	
Yes	20 (1.7)	9 (1.8)	
Cirrhosis			0.953
No	557 (48.1)	238 (48.0)	
Yes	600 (51.9)	258 (52.0)	
Portal vein tumor thrombus			0.264
No	1,064 (92.0)	464 (93.5)	
Yes	93 (8.0)	32 (6.5)	
Systemic immune-inflammation index/albumin			0.817
Low	581 (50.2)	246 (49.6)	
High	576 (49.8)	250 (50.4)	

Supplementary Table 2 Univariate and multivariate Cox proportional hazards regression models for overall survival in the training data

Variables	Univariate		Multivariate	
	HR (95%CI)	<i>P</i> value	AHR (95%CI)	^a <i>P</i> value
Sex				
Female	Reference			
Male	1.12(0.86-1.47)	0.398		
Age, years				
≤ 60	Reference		Reference	
> 60	0.67 (0.54-0.84)	< 0.001	0.75 (0.59-0.95)	0.015

Hepatitis B surface antigen					
Negative	Reference		Reference		
Positive	1.69 (1.24-2.31)	0.001	1.62 (1.17-2.24)	0.004	
Alpha-fetoprotein, ng/mL					
< 400	Reference		Reference		
≥ 400	1.72 (1.38-2.16)	< 0.001	1.45 (1.16-1.83)	0.001	
Alanine transaminase, IU/L					
< 40	Reference				
≥ 40	1.64 (1.34-2.00)	< 0.001			
Aspartate transaminase, IU/L					
< 40	Reference		Reference		
≥ 40	2.13 (1.76-2.58)	< 0.001	1.36 (1.11-1.67)	0.003	
Prothrombin time, second					
≤ 13	Reference				
> 13	1.42(1.13-1.78)	0.002			
Albumin-bilirubin grade					
1	Reference		Reference		
2	1.76 (1.44-2.16)	< 0.001	1.32 (1.07-1.63)	0.011	
Tumor diameter, cm					
< 5	Reference		Reference		
≥ 5	3.19 (2.57-3.95)	< 0.001	2.28 (1.80-2.88)	< 0.001	

Number of tumors				
Single	Reference		Reference	
Multiple	1.74 (1.38-2.19)	< 0.001	1.73 (1.37-2.18)	< 0.001
Hypertension				
No	Reference			
Yes	0.72(0.54-0.96)	0.027		
Diabetes				
No	Reference			
Yes	1.09(0.79-1.52)	0.593		
Cardiovascular disease				
No	Reference			
Yes	1.05 (0.52-2.12)	0.888		
Cirrhosis				
No	Reference			
Yes	1.06 (0.88-1.29)	0.523		
Portal vein tumor thrombus				
No	Reference		Reference	
Yes	4.39 (3.40-5.67)	< 0.001	2.95 (2.26-3.84)	< 0.001
Systemic immune-inflammation index/albumin				
Low	Reference		Reference	
High	2.07 (1.71-2.50)	< 0.001	1.52 (1.24-1.86)	< 0.001

HR: Hazard ratio; AHR: Adjusted hazard ratio.