

1 **Supplementary Materials**

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Table S1. Baseline Characteristics

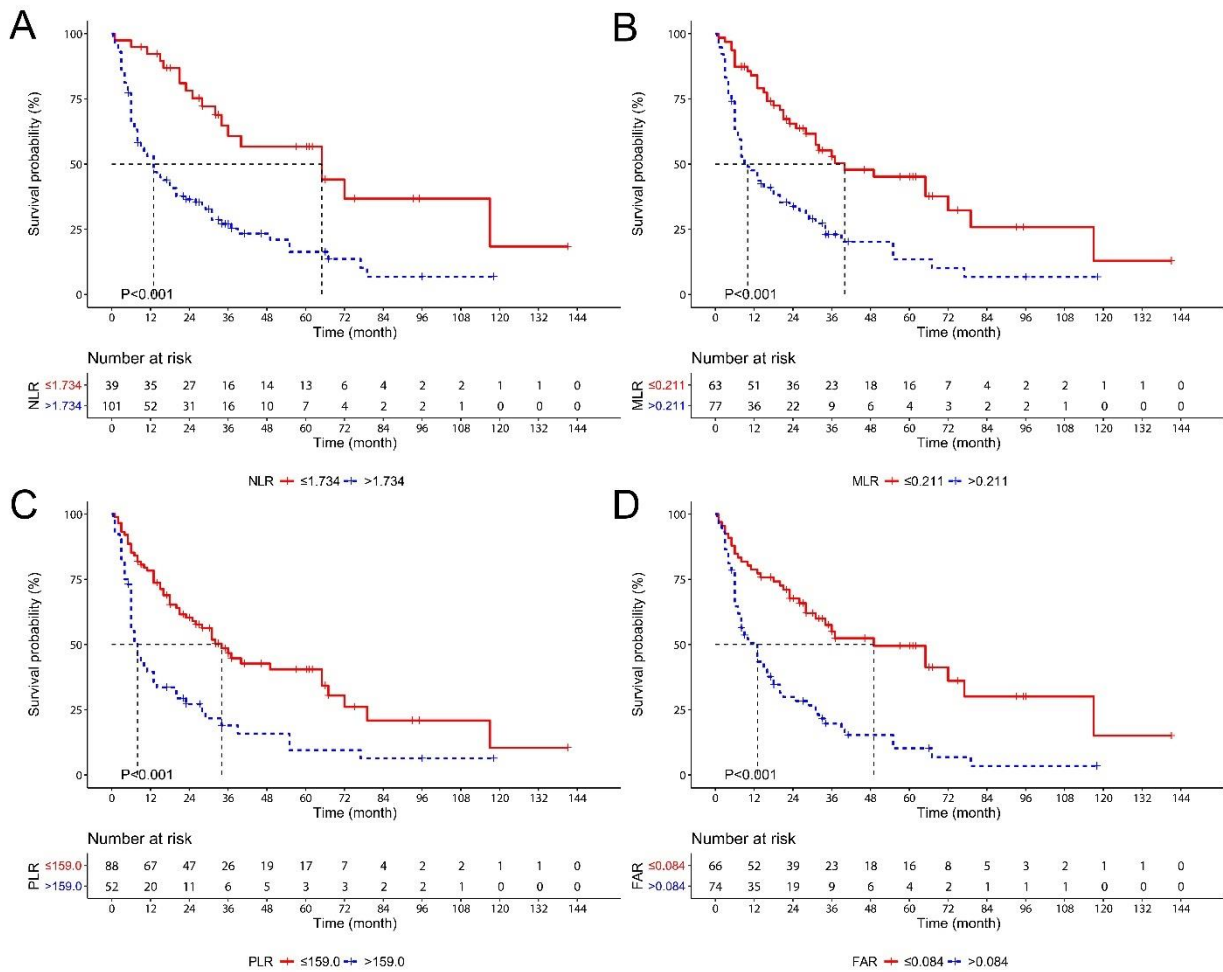
Variates	Entire cohort (n=140)	Training cohort (n=80)	Validation cohort (n=60)	P
Sex				0.276
Female	82 (58.6%)	50 (62.5%)	32 (53.3%)	
Male	58 (41.4%)	30 (37.5%)	28 (46.7%)	
Age				0.200
≤65	80 (57.1%)	42 (52.5%)	38 (63.3%)	
>65	60 (42.9%)	38 (47.5%)	22 (36.7%)	
BMI (kg/m²)				0.590
≤24	76 (54.3%)	45 (56.2%)	31 (51.7%)	
>24	64 (45.7%)	35 (43.8%)	29 (48.3%)	
Tumor size (cm)				0.155
≤3	81 (57.9%)	59 (54.6%)	22 (68.8%)	
>3	59 (42.1%)	49 (45.4%)	10 (31.3%)	
Tumor number				0.393
Single	112 (80.0%)	62 (77.5%)	50 (83.3%)	
Multiple	28 (20.0%)	18 (22.5%)	10 (16.7%)	
Tumor differentiation				0.231
Poor	55 (39.3%)	28 (35.0%)	27 (45.0%)	
Moderate-well	85 (60.7%)	52 (65.0%)	33 (55.0%)	
TNM stage				0.529
0	4 (2.9%)	2 (2.5%)	2 (3.3%)	
I	13 (9.3%)	10 (12.5%)	3 (5.0%)	
II	12 (8.6%)	6 (7.5%)	6 (10.0%)	
IIIA	45 (32.1%)	26 (32.5%)	19 (31.7%)	
IIIB	45 (32.1%)	24 (30.0%)	21 (35.0%)	
IV	21 (15.0%)	12 (15.0%)	9 (15.0%)	
T stage				0.615
Tis	4 (2.9%)	2 (2.5%)	2 (3.3%)	
T1	12 (8.6%)	10 (12.5%)	2 (3.3%)	
T2	20 (14.3%)	9 (11.3%)	11 (18.3%)	
T3	96 (68.6%)	55 (68.8%)	41 (68.3%)	
T4	8 (5.7%)	4 (5.0%)	4 (6.7%)	
N stage				0.336
N0	80 (57.1%)	48 (60.0%)	32 (53.3%)	
N1	50 (35.7%)	28 (35.0%)	22 (36.7%)	
N2	10 (7.1%)	4 (5.0%)	6 (10.0%)	
M stage				0.745
M0	130 (92.9%)	75 (93.8%)	55 (91.7%)	
M1	10 (7.1%)	5 (6.3%)	5 (8.3%)	
R0 resection				0.130
No	52 (37.1%)	34 (42.5%)	18 (30.0%)	
Yes	88 (62.9%)	46 (57.5%)	42 (70.0%)	
Adjuvant therapy				0.486
No	108 (77.1%)	60 (75.0%)	48 (80.0%)	
Yes	32 (22.9%)	20 (25.0%)	12 (20.0%)	
Jaundice				0.841
No	118 (84.29%)	67 (83.8%)	51 (85.0%)	
Yes	22 (15.71%)	13 (16.2%)	9 (15.0%)	
Gallstone				0.007*
No	75 (53.57%)	35 (43.8%)	40 (66.7%)	
Yes	65 (46.43%)	45 (56.2%)	20 (33.3%)	
Diabetes				0.634

No	110 (78.57%)	64 (80.0%)	46 (76.7%)	
Yes	30 (21.43%)	16 (20.0%)	14 (23.3%)	
Hypertension				0.001*
No	98 (70.0%)	47 (58.8%)	51 (85.0%)	
Yes	42 (30.0%)	33 (41.3%)	9 (15.0%)	
CA19-9 (U/mL)				0.883
≤40	62 (44.3%)	35 (43.8%)	27 (45.0%)	
>40	78 (55.7%)	45 (56.2%)	33 (55.0%)	
ALB (g/L)				0.486
≤35	20 (14.3%)	10 (12.5%)	10 (16.7%)	
>35	120 (85.7%)	70 (87.5%)	50 (83.3%)	
GGT (U/L)				0.495
≤40	70 (50.00%)	42 (52.5%)	28 (46.7%)	
>40	70 (50.00%)	38 (47.5%)	32 (53.3%)	
AGR				0.771
≤2.050	108 (77.1%)	61 (76.3%)	47 (78.3%)	
>2.050	32 (22.9%)	19 (23.8%)	13 (21.7%)	
NLR				0.514
≤1.734	39 (27.9%)	24 (30.0%)	15 (25.0%)	
>1.734	101 (72.1%)	56 (70.0%)	45 (75.0%)	
MLR				0.170
≤0.211	63 (45.0%)	40 (50.0%)	23 (38.3%)	
>0.211	77 (55.0%)	40 (50.0%)	37 (61.7%)	
PLR				0.801
≤159.0	88 (62.9%)	51 (63.7%)	37 (61.7%)	
>159.0	52 (37.1%)	29 (36.3%)	23 (38.3%)	
FAR				0.261
≤0.084	66 (47.1%)	41 (51.2%)	25 (41.7%)	
>0.084	74 (52.9%)	39 (48.8%)	35 (58.3%)	
Hospital stay (day)	15 (3–70)	15 (3–68)	15 (5–70)	0.239
Bleeding volume (mL)	200 (0–1500)	200 (0–800)	200 (0–1500)	0.485
Postsurgical complication				0.481
No	109 (77.9%)	64 (80.0%)	45 (75.0%)	
Yes	31 (22.1%)	16 (20.0%)	15 (25.0%)	

1 Notes: Asterisks indicate statistically significant differences between the training cohort and the
2 validation cohort ($P<0.05$).

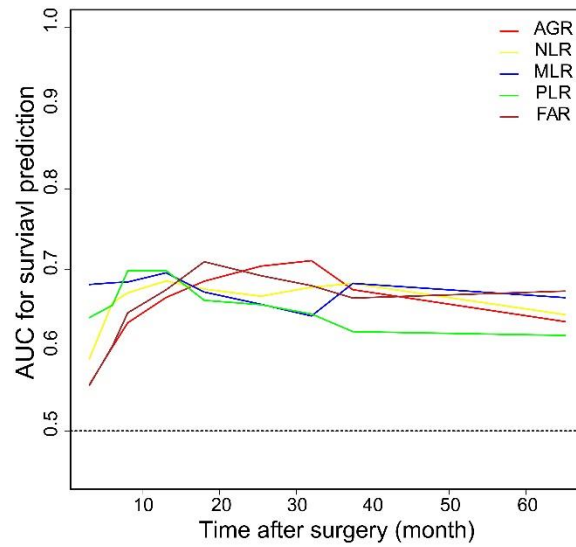
3 Abbreviations: AGR, albumin-to- γ -glutamyltransferase ratio; ALB, albumin; BMI, body mass
4 index; CA19-9, carbohydrate antigen 19-9; FAR: fibrinogen-to-albumin ratio; GGT, γ -
5 glutamyltransferase; MLR: monocyte-to-lymphocyte ratio; NLR: neutrophil-to-lymphocyte ratio;
6 PLR: platelet-to-lymphocyte ratio.

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2 **Figure S1.** Kaplan-Meier survival curves for overall survival in gallbladder cancer patients
3 stratified according to NLR (A), MLR (B), PLR (C) and FAR (D).
4 Abbreviations: FAR, fibrinogen-to-albumin ratio; MLR, monocyte-to-lymphocyte ratio; NLR,
5 neutrophil-to-lymphocyte ratio; PLR, platelet-to-lymphocyte ratio.

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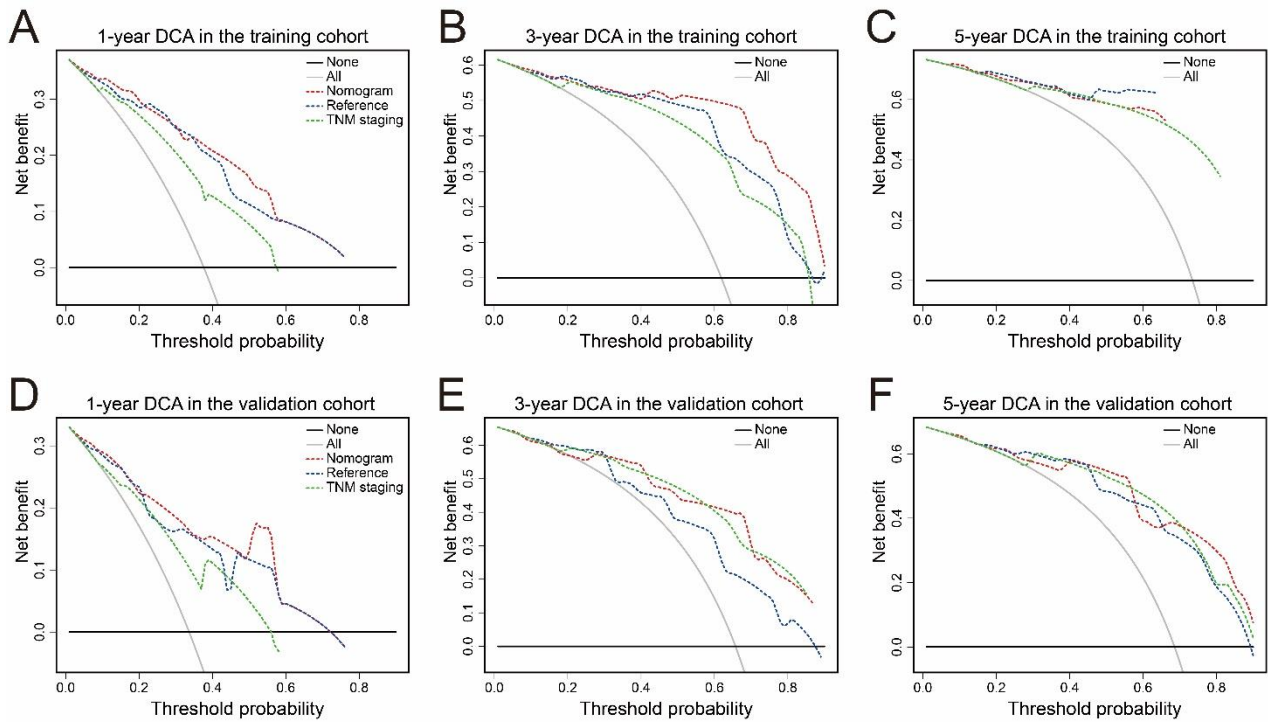


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 2 **Figure S2.** Time-dependent area under ROC curves of AGR and other inflammation-related indices
 3 for overall survival prediction.

4 Abbreviations: AGR, albumin-to- γ -glutamyltransferase ratio; FAR, fibrinogen-to-albumin ratio;
 5 MLR, monocyte-to-lymphocyte ratio; NLR, neutrophil-to-lymphocyte ratio; PLR, platelet-to-
 6 lymphocyte ratio.

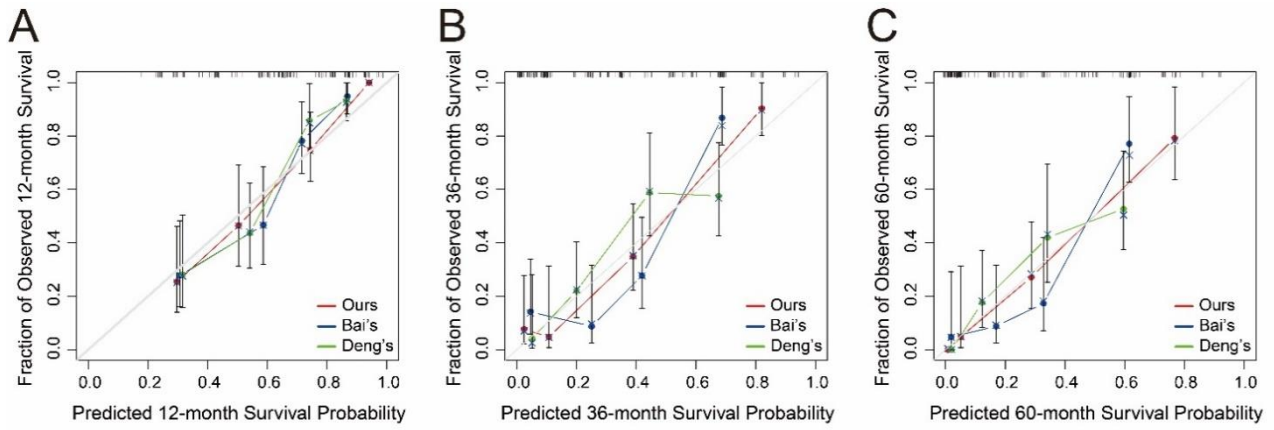
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 2 **Figure S3.** Decisive curve analyses of the nomogram (red), the reference model (blue) and the TNM
 3 staging system (green) for 1-, 3- and 5-year overall survival in the training cohort (A-C) and the
 4 validation cohort (D-F). The horizontal black line represents all patients are negative and the net
 5 benefit is 0; the grey line represents all patients are positive. The time was marked on the top of each
 6 panel.

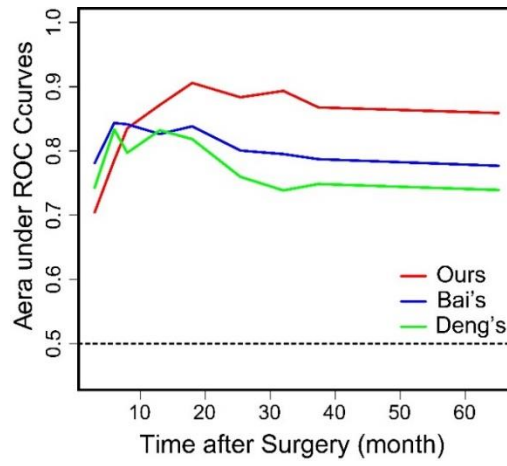
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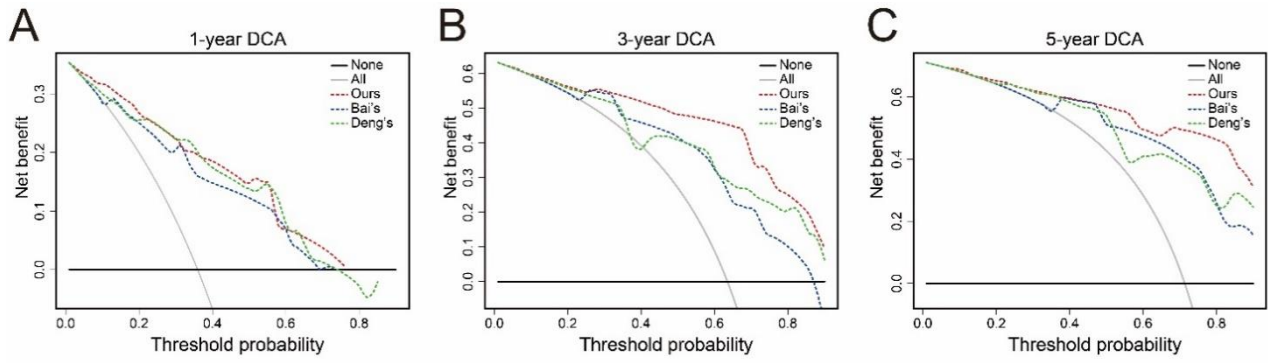
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2 **Figure S4.** Calibration curves of our (red), Bai's (blue) and Deng's (green) nomograms for 1-, 3-
 3 and 5-year overall survival. The x-axis represents nomogram predicted probability of survival, and
 4 the y-axis is the actually observed survival probability.

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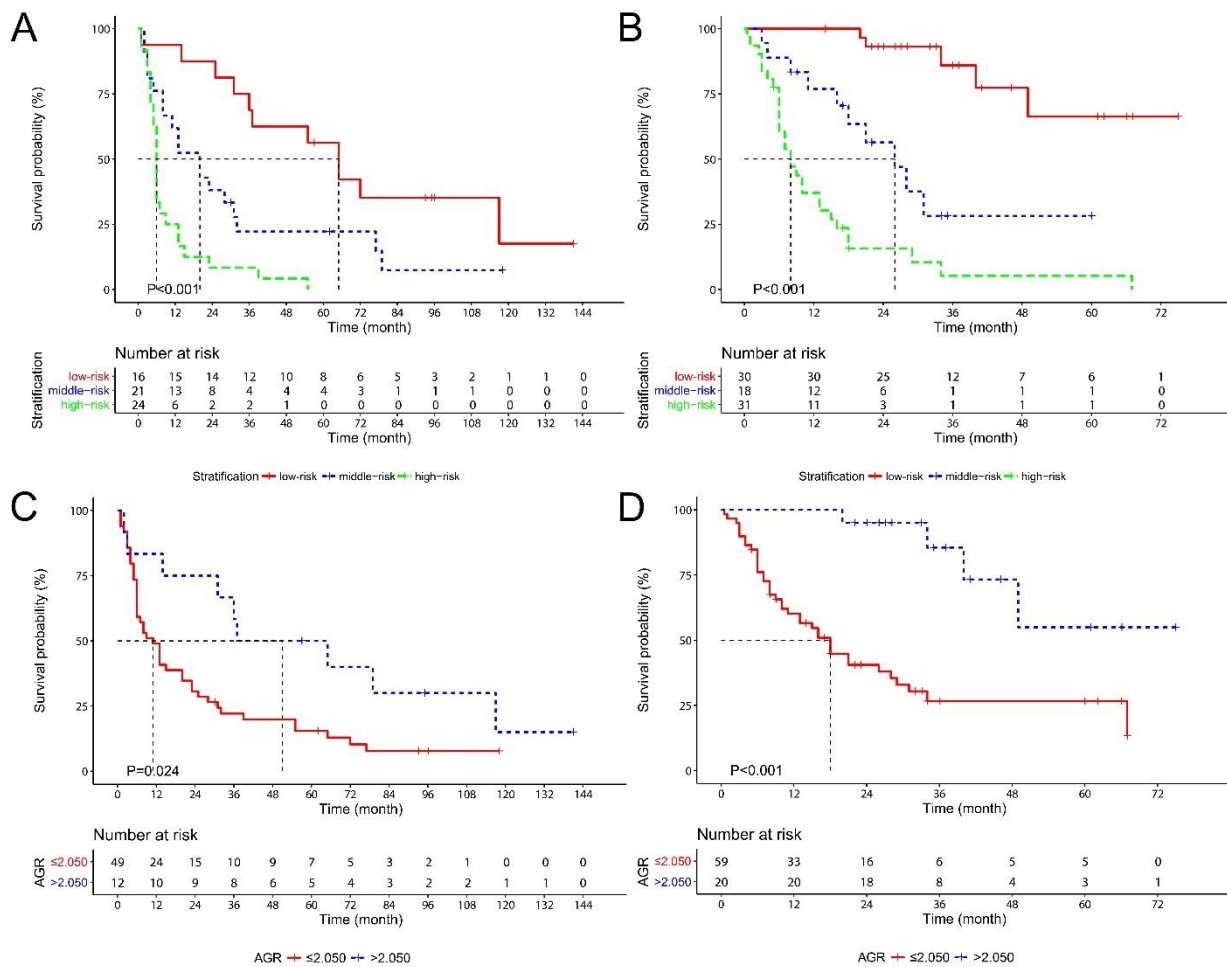
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2 **Figure S5.** Time-dependent area under ROC curves of our (red), Bai's (blue) and Deng's (green)
3 nomograms.
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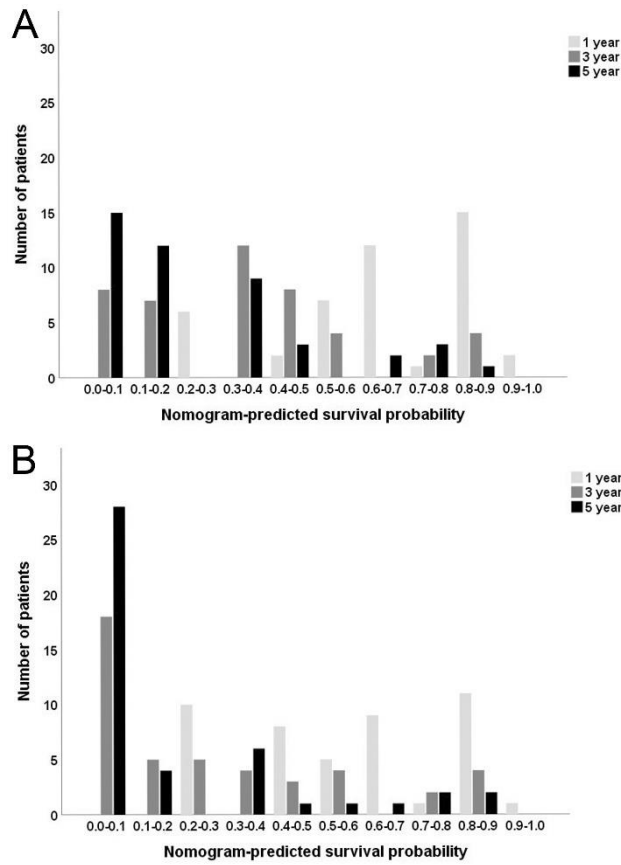
2 **Figure S6.** Decisive curve analysis plots of our (red), Bai's (blue) and Deng's (green) nomograms for
 3 1-, 3- and 5-year overall survival. The horizontal black line represents all patients are negative and
 4 the net benefit is 0; the grey line represents all patients are positive. The time was marked on the top
 5 of each panel.

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 2 **Figure S7.** Kaplan-Meier survival curves for overall survival according to the risk stratification
 3 model (A-B) and AGR (C-D) in the 2003-2012 and 2013-2017 subgroups. A: survival curves of the
 4 risk stratification model in the 2003-2012 subgroup; B: survival curves of the risk stratification
 5 model in the 2013-2017 subgroup; C: survival curves of different levels of AGR in the 2003-2012
 6 subgroup; D: survival curves of different levels of AGR in the 2013-2017 subgroup.
 7 Abbreviations: AGR, albumin-to- γ -glutamyltransferase ratio.

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2 **Figure S8.** Survival probability predicted by nomogram in patients with TNM stage IIIA (A) & IIIB
3 (B). The x-axis represents the nomogram-predicted survival probability at 1, 3 and 5 years after
4 surgery, and the y-axis is the number of patients within the corresponding interval of nomogram-
5 predicted survival probability.

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