Table SI. Demographics and clinical characteristics of patients in the training and external validation cohort.

Demographic or clinicopathologic characteristic	Training cohort (n=1,473)		Validation cohort (n=638)	
	Patients, n	%	Patients, n	%
Age, years				
≤75	1,321	89.68	565	88.56
>75	152	10.32	73	11.44
Sex				
Female	995	67.55	487	76.33
Male	478	32.45	151	23.67
Ethnicity				
White	1,336	90.70	574	89.97
Black	137	9.30	64	10.03
Marital status at diagnosis				
Married	625	42.43	296	46.39
Divorced+separated+widowed	441	29.94	174	27.27
Single	407	27.63	168	26.34
Histology				
Basaloid carcinoma	35	2.38	3	0.47
Cloacogenic carcinoma	109	7.40	16	2.51
Squamous cell carcinoma	1,329	90.22	619	97.02
Grade				
Well differentiated	111	7.54	43	6.74
Moderately differentiated	465	31.57	194	30.41
Poorly differentiated	451	30.62	198	31.03
Undifferentiated; anaplastic	14	0.95	9	1.41
Unknown	432	29.32	194	30.41
T 6th				
T1	287	19.48	110	17.24
T2	771	52.34	329	51.57
T3	273	18.53	128	20.06
T4	142	9.65	71	11.13
N 6th				
N0	1,029	69.86	392	61.44
N1	160	10.86	76	11.91
N2	179	12.15	99	15.52
N3	105	7.13	71	11.13
Stage 6th				
I	247	16.77	87	13.64
II	709	48.13	278	43.57
IIIA	216	14.66	91	14.26
IIIB	301	20.44	182	28.53
Number of cancer-specific dead/N	343/1,473	23.29	106/638	16.61
Number of dead/N	509/1,473	34.56	146/638	22.88
1-year cumulative overall survival	1,358/1,473	92.19	591/638	92.63
3-year cumulative overall survival	1,129/1,473	76.65	488/638	76.49
5-year cumulative overall survival	1,004/1,473	68.16	-	-

-, no related data. T6th, T category from the sixth edition of the American Joint Committee on Cancer TNM classification; N6th, N category from the sixth edition of the American Joint Committee on Cancer TNM classification; Stage 6th, stage category from the sixth edition of the American Joint Committee on Cancer TNM classification.

Table SII. Univariate and multivariate analyses for cancer-specific survival.

Variable	Univariate analysis P-value	Multivariate analysis Hazard ratio (95% CI)	P-value	Included factors for construction of the nomogram Hazard ratio (95% CI)	P-value
Age, years	<0.001		<0.001		<0.001
≤75		Reference		Reference	
>75		2.202 (1.618-2.996)		2.202 (1.618-2.996)	
Sex	<0.001		<0.001		<0.001
Female		Reference		Reference	
Male		1.952 (1.549-2.460)		1.952 (1.549-2.460)	
Ethnicity	<0.001		0.005		0.005
White		Reference		Reference	
Black		1.555 (1.140-2.122)		1.555 (1.140-2.122)	
Marital status at diagnosis	<0.001		0.033		0.033
Married		Reference		Reference	
Divorced+separated+widowed		1.339 (1.018-1.762)		1.339 (1.018-1.762)	
Single		1.412 (1.064-1.873)		1.412 (1.064-1.873)	
Histology	0.227				
Basaloid carcinoma					
Cloacogenic carcinoma					
Squamous cell carcinoma					
Grade	0.103				
Well differentiated					
Moderately differentiated					
Poorly differentiated					
Undifferentiated; anaplastic unknown					
T6th	<0.001		<0.001		<0.001
T1		Reference		Reference	
T2		2.134 (1.425-3.196)		2.134 (1.425-3.196)	
T3		3.186 (2.062-4.924)		3.186 (2.062-4.924)	
T4		4.880 (3.093-7.699)		4.880 (3.093-7.699)	
N6th	<0.001		<0.001		<0.001
N0		Reference		Reference	
N1		1.293 (0.919-1.820)		1.293 (0.919-1.820)	
N2		1.836 (1.369-2.461)		1.836 (1.369-2.461)	
N3		2.200 (1.575-3.072)		2.200 (1.575-3.072)	
Stage 6th	<0.001				
I					
II					
IIIA					
IIIB					

T6th, T category from the sixth edition of the American Joint Committee on Cancer TNM classification; N6th, N category from the sixth edition of the American Joint Committee on Cancer TNM classification; Stage 6th, stage category from the sixth edition of the American Joint Committee on Cancer TNM classification.

Table SIII. Univariate and multivariate analyses of overall survival.

Variable	Univariate analysis P-value	Multivariate analysis		Included factors for construction of the nomogram	
		Hazard ratio (95% CI)	P-value	Hazard ratio (95% CI)	P-value
Age, years	<0.001		<0.001		<0.001
≤75		Reference		Reference	
>75		2.626 (2.076-3.322)		2.626 (2.076-3.322)	
Sex	<0.001		<0.001		<0.001
Female		Reference		Reference	
Male		1.716 (1.416-2.080)		1.716 (1.416-2.080)	
Ethnicity	<0.001		<0.001		<0.001
White		Reference		Reference	
Black		1.636 (1.265-2.115)		1.636 (1.265-2.115)	
Marital status at diagnosis	<0.001		0.001		0.001
Married		Reference		Reference	
Divorced+separated+widowed		1.447 (1.159-1.806)		1.447 (1.159-1.806)	
Single		1.442 (1.141-1.824)		1.442 (1.141-1.824)	
Histology	0.475				
Basaloid carcinoma					
Cloacogenic carcinoma					
Squamous cell carcinoma					
Grade	0.418				
Well differentiated					
Moderately differentiated					
Poorly differentiated					
Undifferentiated; anaplastic					
Unknown					
T6th	<0.001		<0.001		<0.001
T1		Reference		Reference	
T2		1.714 (1.283-2.289)		1.714 (1.283-2.289)	
T3		2.332 (1.685-3.226)		2.332 (1.685-3.226)	
T4		3.252 (2.291-4.617)		3.252 (2.291-4.617)	
N6th	<0.001		<0.001		<0.001
N0		Reference		Reference	
N1		1.075 (0.803-1.440)		1.075 (0.803-1.440)	
N2		1.510 (1.174-1.942)		1.510 (1.174-1.942)	
N3		1.744 (1.297-2.346)		1.744 (1.297-2.346)	
Stage 6th	<0.001				
I					
II					
IIIA					
IIIB					

T6th, T category from the sixth edition of the American Joint Committee on Cancer TNM classification; N6th, N category from the sixth edition of the American Joint Committee on Cancer TNM classification; Stage 6th, stage category from the sixth edition of the American Joint Committee on Cancer TNM classification.

Table SIV. Prognostic scores of variables in the nomograms.

Variable and prognostic score	Score (nomogram of CSS)	Mean of estimated 5-year CSS, %	Score (nomogram of OS)	Mean of estimated 5-year OS, %
Age, years				
≤75	0		0	
>75	4.98		8.19	
Sex				
Female	0		0	
Male	4.22		4.57	
Ethnicity				
White	0		0	
Black	2.79		4.17	
Marital status at diagnosis				
Married	0		0	
Divorced+separated+widowed	1.84		3.12	
Single	2.18		3.11	
T6th				
T1	0		0	
T2	4.77		4.56	
T3	7.30		7.17	
T4	10.00		10.00	
N6th				
N0	0		0	
N1	1.62		0.62	
N2	3.83		3.50	
N3	4.99		4.74	
Total prognostic score (CSS)				
0-11.00		86.63		
11.00-14.50		70.43		
≥14.50		45.16		
Total prognostic score (OS)				
0-8.30				83.49
8.30-13.80				69.40
≥13.80				44.54

T6th, T category from the sixth edition of the American Joint Committee on Cancer TNM classification; N6th, N category from the sixth edition of the American Joint Committee on Cancer TNM classification; CSS, cancer-specific survival; OS, overall survival.

Table SV. Variance inflation factor.

Variable	Variance inflation factor	
	Cancer-specific survival	Overall survival
Age		
≤75 years old	Reference	Reference
>75 years old	1.09	1.09
Sex		
Female	Reference	Reference
Male	1.18	1.19
Ethnicity		
White	Reference	Reference
Black	1.09	1.07
Marital status at diagnosis		
Married	Reference	Reference
Divorced+separated+widowed	1.48	1.49
Single	1.66	1.64
T6th		
T1	Reference	Reference
T2	3.61	2.77
T3	3.36	2.58
T4	2.81	2.13
N6th		
N0	Reference	Reference
N1	1.10	1.07
N2	1.15	1.11
N3	1.24	1.19

Normal range of variance inflation factor: 0-10. T6th, T category from the sixth edition of the American Joint Committee on Cancer TNM classification; N6th, N category from the sixth edition of the American Joint Committee on Cancer TNM classification.