Supplementary

Table S1 The parameters of CT scanners in each medical center

Medical center	Equipment	Parameters
CCAM	General Electric-Discovery CT750HD-CT scanner	Tube voltage: 120 kVp; Inter-layer spacing: 0.8 mm; slice thickness: 1.25 mm; pitch: 0.984; reconstruction matrix: 512*512
	General Electric-Optima CT660-CT scanner	Tube voltage: 120 kVp; inter-layer spacing: 0.8 mm; slice thickness: 1.25 mm; Pitch: 0.984; reconstruction matrix: 512*512
1CMU	Siemens AG-SOMATOM-CT scanner	Tube voltage: 120 kVp; inter-layer spacing: 0.8 mm; slice thickness: 1.0 mm; pitch: 1.0; reconstruction matrix: 512*512
	General Electric-Discovery CT750HD-CT scanner	Tube voltage: 120 kVp; inter-layer spacing: 0.625 mm; slice thickness: 0.625 mm; pitch: 1.375; reconstruction matrix: 512*512
BCYH	Siemens AG-SOMATOM-CT scanner	Tube voltage: 120 kVp; inter-layer spacing: 0.75 mm; slice thickness: 1.0 mm; pitch: 1.2; reconstruction matrix: 512*512

1CMU, The First Affiliated Hospital of Chongqing Medical University; BCYH, Beijing Chao-Yang Hospital; CCAM, Cancer Hospital, Chinese Academy of Medical Sciences.

Table S2 The lymph node metastasis information for each group

pN stage	Training group (n=336)	Testing group (n=167)	Validation group (n=75)
N0	181	90	44
N1	96	38	14
N2	59	39	17

Table S3 Comparison of tumor size with lymph node metastases between groups

Tumor size	Training group (n=336)		Testing group (n=167)		Validation group (n=75)	
	N0 (n=181)	N+ (n=155)	N0 (n=90)	N+ (n=77)	N0 (n=44)	N+ (n=31)
cT1b (10–20 mm)	96 (53.0%)	75 (48.4%)	48 (53.3%)	40 (51.9%)	26 (59.1%)	13 (41.9%)
cT1c (20–30 mm)	85 (47.0%)	80 (51.6%)	42 (46.7%)	37 (48.1%)	18 (40.9%)	18 (58.1%)
P value	0.39		0.86		0.14	

Table S4 The list of radiomics features used to construct the prediction model

ROI	β	P value	OR	Walds
square_gldm_DependenceVariance	0.047	<0.001	1.048	21.503
gradient_firstorder_InterquartileRange	−0.022	0.38	0.978	0.766
gradient_firstorder_RobustMeanAbsoluteDeviation	0.063	0.32	1.066	0.985
logarithm_firstorder_RobustMeanAbsoluteDeviation	0.003	0.06	1.003	3.529
exponential_firstorder_InterquartileRange	−2.420	0.004	0.089	8.299
square_gldm_LowGrayLevelEmphasis	−4.988	0.04	0.007	4.247
squareroot_firstorder_RootMeanSquared	−0.007	0.03	0.993	4.709
squareroot_ngtdm_Contrast	1.219	0.057	3.383	3.614

OR, odds ratio; ROI, region of interest.