

Table SI. Clinical characteristics of all patients (n=1,185).

Factors	Value
Primary CRC location, n	
Appendix vermiformis	5
Caecum	80
Ascending colon	169
Transverse colon	132
Descending colon	55
Sigmoid colon	303
Rectosigmoid	141
Upper rectum	136
Lower rectum	156
Anal canal	8
Main tumor type, n	
Ip	120
Is	284
Isp	264
Ila	352
Ilb	1
Ilc	96
N.A.	68
Main histological grade, n	
Tub1	711
Tub2	412
Pap	35
Muc	5
Por	5
Sig	1
N.A.	16
Head invasion, n	
Absent	1,144
Present	41
Submucosal invasion depth ^a , μm	2862 \pm 69
Lymphatic invasion, n	
Ly0	727
Ly1a	412

Ly1b	24
Ly1c	5
N.A.	17
Venous invasion, n	
V0	919
V1a	228
V1b	19
V1c	2
N.A.	17
Budding grade, n	
BD1	783
BD2	136
BD3	60
N.A.	206
Lymph node metastasis, n	
N0	1,035
N1	113
N2	12
N3	1
N.A.	24

^aMean \pm SD. CRC, colorectal cancer; Ip, pedunculated type of protruded type; Isp, subpedunculated type of protruded type; Is, sessile type of protruded type; Por, poorly differentiated adenocarcinoma; Sig, signet-ring cell carcinoma; Muc, mucinous carcinoma; Pap, papillary adenocarcinoma; Tub1, well-differentiated tubular adenocarcinoma; Tub2, moderately differentiated tubular adenocarcinoma; N.A., (data) not available.

Table SII. Comparison of clinicopathological factors in the training and validation datasets.

Factors	Training set (n=701)	Validation set (n=233)	P-value
Primary CRC location, n			0.874
Right	242	79	
Left	459	154	
Tumor type, n			0.235
0-I	390	140	
0-II	311	93	
Tumor type ^a , n			0.545
Including 0-II	250	155	
Not including 0-II	451	78	
Head invasion, n			0.164
Absent	679	221	
Present	22	12	
SM invasion depth ^b , μm	2997 \pm 96	2677 \pm 120	0.202
Main histological grade, n			0.577
Tub	670	225	
Not tub	31	8	
Poorest histological grade, n			0.571
Including muc, por, sig	30	8	
Not including muc, por, sig	671	225	
Lymphatic invasion, n			0.150
Absent	287	83	
Present	414	150	
Venous invasion, n			0.363
Absent	542	187	
Present	159	46	
Budding grade, n			0.566
BD1	569	185	
BD2, 3	132	48	
Lymph node metastasis, n			0.112
Absent	614	213	
Present	87	20	

^aAll tumor types are included, not just the largest area; ^bMean \pm SD. por, poorly differentiated adenocarcinoma; sig, signet-ring cell carcinoma; muc, mucinous carcinoma; tub, tubular adenocarcinoma.

Table SIII. Comparison of AUCs between the nomogram and risk factors recommended for additional surgical resection after endoscopic treatment.

Factor	Sensitivity	Specificity	AUC	OR	95% CI	P-value
Nomogram (≥ 114)	0.822	0.637	0.722	7.193	4.484-12.006	<0.001
Nomogram (≥ 90)	1.000	0.024	0.519	5.246	0.713-38.581	0.104
Histological grade (por, sig or muc)	0.094	0.966	0.530	1.826	0.825-4.041	0.137
Depth of invasion ($\geq 1,000 \mu\text{m}$)	0.916	0.134	0.525	1.059	0.499-2.249	0.881
Positive vascular invasion	0.841	0.565	0.703	6.828	4.121-12.123	<0.001
Venous invasion	0.411	0.855	0.608	1.826	1.083-3.080	0.024
Lymphatic invasion	0.757	0.655	0.703	2.874	1.287-6.418	0.010
Budding (BD2/3)	0.356	0.827	0.586	1.800	1.124-2.881	0.014

AUC, area under the curve; OR, odds ratio; CI, confidence interval; por, poorly differentiated adenocarcinoma; sig, signet-ring cell carcinoma; muc, mucinous carcinoma.