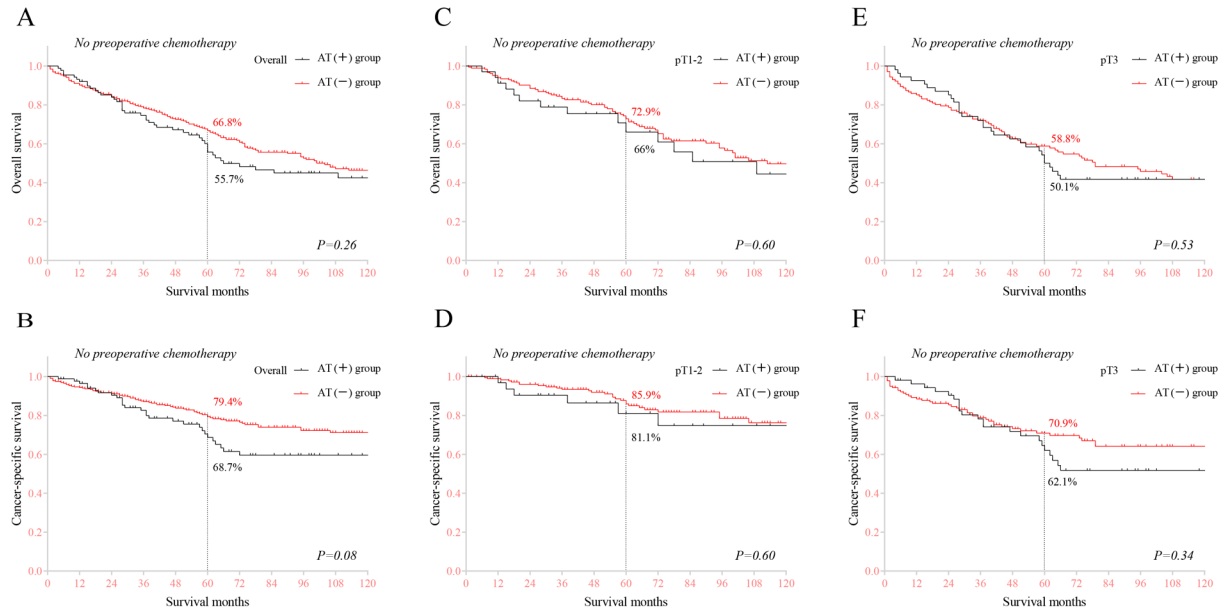


**Figure 1** Kaplan-Meier curves for the RM patients after preoperative chemotherapy and the subtype analysis based on the T stage. AT, postoperative adjuvant chemotherapy.



**Figure S2** Kaplan-Meier curves for the RM patients who did not receive preoperative chemotherapy and the subtype analysis based on the T stage. AT, postoperative adjuvant chemotherapy.

**Table S1** Baseline characteristics of patients with pT1-3N0M0 RC

Variable	RA, n (%)	RM, n (%)	P
Total	21,486	709	
Age (years)			0.14
<70	13,769 (64.1)	435 (61.4)	
≥70	7,717 (35.9)	274 (38.6)	
Gender			0.26
Male	12,939 (60.2)	442 (62.3)	
Female	8,547 (39.8)	267 (37.7)	
Race			0.12
White	17,776 (82.7)	591 (83.4)	
Black	1,660 (7.7)	64 (9)	
Other	2,050 (9.5)	54 (7.6)	
Marital status			0.002
Single	7,980 (37.1)	304 (42.9)	
Married	13,506 (62.9)	405 (57.1)	
Household income			0.80
< \$60,000	7,355 (34.2)	246 (34.7)	
≥ \$60,000	1,4131 (65.8)	463 (65.3)	
Regional nodes examined			0.37
<12	11,011 (51.2)	338 (47.7)	
≥12	10,475 (48.8)	371 (52.3)	
Grade			<0.001
I/II	19,554 (91)	603 (85)	
III/IV	1,932 (9)	106 (15)	
Pathologic T			<0.001
pT1-2	13,020 (60.6)	282 (39.8)	
pT3	8,466 (39.4)	427 (60.2)	
Sphincter preservation			<0.001
No	3,360 (15.6)	176 (24.8)	
Yes	18,126 (84.4)	533 (75.2)	
Preoperative chemotherapy			<0.001
No	14,617 (68)	420 (59.2)	
Yes	6,869 (32)	289 (40.8)	
AT			0.009
No	17,396 (81)	544 (76.7)	
Yes	4,090 (19)	165 (23.3)	

RA, rectal adenocarcinoma; RM, rectal mucinous adenocarcinoma; AT, postoperative adjuvant chemotherapy.

**Table S2** Univariate and multivariate analyses of the effects of prognostic factors on 5-year OS and CSS in patients with pT1-3N0 RC (overall cohort)

Variable	Overall survival				Cancer-specific survival			
	Univariate HR (95% CI)	P	Multivariate HR (95% CI)	P	Univariate HR (95% CI)	P	Multivariate HR (95% CI)	P
Age (years)		<0.001		<0.001		<0.001		<0.001
<70	reference		reference		reference		reference	
≥70	3.322 (31.162-3.49)		3.176 (3.03-3.33)		2.22 (2.061-2.384)		2.21 (2.063-2.368)	
Gender		<0.001		<0.001		<0.001		<0.001
Male	reference		reference		reference		reference	
Female	0.845 (0.807-0.885)		0.735 (0.7-0.772)		0.836 (0.78-0.895)		0.772 (7.19-0.829)	
Race		<0.001		<0.001		0.001		0.01
White	reference		reference		reference		reference	
Black	1.16 (1.065-1.263)		1.188 (1.188-1.287)		1.212 (1.067-1.376)		1.192 (1.059-1.34)	
Other	0.771 (0.713-0.833)		0.873 (0.8-0.952)		0.911 (0.812-1.022)		0.995 (0.882-1.123)	
Marital status		<0.001		<0.001		<0.001		<0.001
Single	reference		reference		reference		reference	
Married	0.797 (0.757-0.838)		0.699 (0.667-0.377)		0.81 (0.751-0.873)		0.705 (0.658-0.756)	
Household income		<0.001		<0.001		<0.001		<0.001
< \$60,000	reference		reference		reference		reference	
≥ \$60,000	0.817 (0.779-0.857)		0.81 (0.772-0.849)		0.859 (0.8-0.921)		0.861 (0.802-0.924)	
Regional nodes examined		<0.001		<0.001		<0.001		<0.001
<12	reference		reference		reference		reference	
≥12	0.743 (0.71-0.778)		0.76 (0.725-0.797)		0.79 (0.739-0.845)		0.738 (0.689-0.791)	
Grade		<0.001		<0.001		<0.001		<0.001
I/II	reference		reference		reference		reference	
III/IV	1.202 (1.111-1.3)		1.148 (1.067-1.234)		1.453 (1.293-1.632)		1.358 (1.228-1.501)	
Pathologic T		<0.001		<0.001		<0.001		<0.001
pT1-2	reference		reference		reference		reference	
pT3	1.253 (1.196-1.312)		1.487 (1.41-1.569)		1.792 (1.673-1.919)		1.844 (1.704-1.995)	
Histopathological type		<0.001		<0.001		<0.001		<0.001
RA	reference		reference		reference		reference	
RM	1.344(1.178-1.533)		1.226 (1.094-1.375)		1.727 (1.421-2.099)		1.446 (1.242-1.683)	
Sphincter preservation		<0.001		<0.001		<0.001		<0.001
No	reference		reference		reference		reference	
Yes	0.807 (0.758-0.859)		0.835 (0.786-0.886)		0.681 (0.621-0.746)		0.782 (0.719-0.851)	
Preoperative chemotherapy		<0.001		<0.001		<0.001		0.03
No	reference		reference		reference		reference	
Yes	0.817 (0.779-0.857)		0.756 (0.714-0.799)		1.177 (1.096-1.263)		0.917 (0.848-0.992)	
AT		<0.001		<0.001		<0.001		0.12
No	reference		reference		reference		reference	
Yes	0.849 (0.802-0.898)		0.868 (0.815-0.924)		1.205 (1.108-1.311)		1.068 (0.982-1.161)	

RA, rectal adenocarcinoma; RM, rectal mucinous adenocarcinoma; AT, postoperative adjuvant chemotherapy.

**Table S3** Univariate and multivariate analyses of the effects of prognostic factors on 5-year OS and CSS in patients with pT1-3N0 RM after surgery alone

Variable	Overall survival				Cancer-specific survival			
	Univariate HR (95% CI)	P	Multivariate HR (95% CI)	P	Univariate HR (95% CI)	P	Multivariate HR (95% CI)	P
Age (years)		<0.001		<0.001		<0.001		<0.001
<70	reference		reference		reference		reference	
≥70	3.097 (2.307-4.158)		3.167 (2.34-4.287)		2.354 (1.569-3.531)		2.531 (1.685-3.801)	
Gender		0.92				0.26		
Male	reference				reference			
Female	0.987 (0.736-1.323)				0.798 (0.532-1.198)			
Race		0.47				0.41		
White	reference				reference			
Black	1.098 (0.671-1.799)				0.982 (0.497-1.942)			
Other	0.59 (0.325-1.073)				0.472 (0.208-1.072)			
Marital status		0.007		0.12		0.27		
Single	reference		reference		reference			
Married	0.7 (0.523-0.936)		0.796 (0.598-1.059)		0.786 (0.527-1.174)			
Household income		0.78				0.37		
< \$60,000	reference				reference			
≥ \$60,000	0.921 (0.682-1.243)				1.199 (0.791-1.818)			
Regional nodes examined		0.07				0.12		
<12	reference				reference			
≥12	0.762 (0.572-1.015)				0.716 (0.481-1.064)			
Grade		0.53				0.19		
I/II	reference				reference			
III/IV	1.167 (0.773-1.762)				1.418 (0.797-2.523)			
Pathologic T		0.002		0.001		<0.001		<0.001
pT1-2	reference		reference		reference		reference	
pT3	1.529 (1.147-2.037)		1.639 (1.231-2.181)		2.312 (1.553-3.443)		2.468 (1.628-3.741)	
Sphincter preservation		0.75				0.23		
No	reference				reference			
Yes	0.942 (0.665-1.336)				0.75 (0.463-1.217)			
AT		0.26				0.08		
No	reference				reference			
Yes	1.251 (0.881-1.776)				1.504 (0.925-2.445)			

AT, postoperative adjuvant chemotherapy.

**Table S4** Univariate and multivariate analyses of the effects of prognostic factors on 5-year OS and CSS in the preoperative chemotherapy group after PSM

Variable	Overall survival				Cancer-specific survival			
	Univariate HR (95% CI)	P	Multivariate HR (95% CI)	P	Univariate HR (95% CI)	P	Multivariate HR (95% CI)	P
Age (years)		<0.001		<0.001		0.001		0.002
<70	reference		reference		reference		reference	
≥70	3.459 (1.917-6.243)		3.535 (2.196-5.689)		2.562 (1.245-5.273)		2.603 (1.431-4.735)	
Gender		0.11				0.38		
Male	reference				reference			
Female	0.635 (0.381-1.058)				0.739 (0.393-1.39)			
Race		0.55				0.59		
White	reference				reference			
Black	1.106 (0.49-2.5)				0.706 (1.256-1.944)			
Other	0.542 (0.223-1.317)				0.533 (0.181-1.567)			
Marital status		0.14				0.19		
Single	reference				reference			
Married	0.704 (0.435-1.139)				0.683 (0.377-1.237)			
Household income		0.88				0.87		
< \$60,000	reference				reference			
≥ \$60,000	0.671 (0.294-1.531)				0.584 (0.216-1.574)			
Regional nodes examined		0.04		0.04		0.02		0.02
<12	reference		reference		reference		reference	
≥12	0.612 (0.383-0.979)		0.612 (0.379-0.988)		0.494 (0.277-0.881)		0.492 (0.268-0.904 )	
Grade		0.17				0.34		
I/II	reference				reference			
III/IV	1.659 (0.671-4.103)				1.566 (0.513-4.78)			
Pathologic T		0.19				0.55		
pT1-2	reference				reference			
pT3	1.587 (0.873-2.885)				1.227 (0.608-2.682)			
Sphincter preservation		0.23				0.95		
No	reference				reference			
Yes	0.745 (0.451-1.232)				0.982 (0.529-1.823)			
AT		0.93				0.70		
No	reference				reference			
Yes	0.977 (0.6-1.59)				1.121 (0.615-2.044)			

AT, postoperative adjuvant chemotherapy.

**Table S5** Univariate and multivariate analyses of the effects of prognostic factors on 5-year OS and CSS in the No preoperative chemotherapy group after PSM

Variable	Overall survival				Cancer-specific survival			
	Univariate HR (95% CI)	P	Multivariate HR (95% CI)	P	Univariate HR (95% CI)	P	Multivariate HR (95% CI)	P
Age (years)		<0.001		<0.001		<0.001		<0.001
<70	reference		reference		reference		reference	
≥70	3.093 (2.05-4.667)		2.698 (1.559-4.669)		2.611 (1.475-4.622)		2.961 (1.705-5.142)	
Gender		0.97				0.13		
Male	reference				reference			
Female	0.974 (0.65-1.457)				0.648 (0.369-1.136)			
Race		0.06				0.38		
White	reference				reference			
Black	1.991 (0.643-6.16)				0.612 (0.128-2.934)			
Other	0.352 (0.105-1.182)				0.353 (0.072-1.729)			
Marital status		0.02		0.90		0.52		
Single	reference		reference		reference			
Married	0.668 (0.402-0.935)		0.966 (0.552-1.69)		0.807 (0.455-1.432)			
Household income		0.93				0.20		
< \$60,000	reference				reference			
≥ \$60,000	0.97 (0.637-1.476)				1.48 (0.824-2.66)			
Regional nodes examined		0.76				0.69		
<12	reference				reference			
≥12	0.936 (0.636-1.378)				1.073 (0.626-1.84)			
Grade		0.16				0.004		0.001
I/II	reference				reference		reference	
III/IV	1.583 (0.788-3.181)				2.761 (1.15-6.387)		3.153 (1.564-6.358)	
Pathologic T		0.12				0.07		
pT1-2	reference				reference			
pT3	1.302 (0.883-1.92)				1.599 (0.931-2.748)			
Sphincter preservation		0.87				0.44		
No	reference				reference			
Yes	0.915 (0.542-1.545)				0.754 (0.365-1.558)			
AT		0.63				0.83		
No	reference				reference			
Yes	1.107 (0.729-1.683)				1.066 (0.595-1.912)			

AT, postoperative adjuvant chemotherapy.