

Table S1 Baseline characteristics of patients with KRAS wild-type tumors according to primary tumor sidedness

Characteristic	Before PSM			After PSM		
	Left sidedness (N=472), n (%)	Right sidedness (N=185), n (%)	P value	Left sidedness (N=185), n (%)	Right sidedness (N=185), n (%)	P value
Demographic factors						
Gender, male	328 (69.5)	113 (61.1)	0.04	109 (58.9)	113 (61.1)	0.75
Neoadjuvant chemotherapy	138 (29.2)	60 (32.4)	0.45	56 (30.3)	60 (32.4)	0.74
Adjuvant systemic treatment						
Post colectomy	313 (66.3)	120 (64.7)	0.72	122 (66.1)	120 (64.7)	0.83
Post hepatectomy	403 (85.4)	159 (86.2)	0.85	158 (85.6)	159 (86.2)	0.88
Synchronous disease	299 (63.3)	129 (69.7)	0.15	129 (69.7)	129 (69.7)	>0.99
Colorectal site						
Tumor stage			0.23			0.60
T1–2	60 (12.7)	17 (9.2)		20 (10.8)	17 (9.2)	
T3–4	412 (87.3)	168 (90.8)		165 (89.2)	168 (90.8)	
Lymph node metastasis			0.52			0.38
Negative	157 (33.3)	67 (36.2)		59 (31.9)	67 (36.2)	
Positive	315 (66.7)	118 (63.8)		126 (68.1)	118 (63.8)	
Extrahepatic metastasis			0.61			>0.99
No	403 (85.4)	155 (83.8)		155 (83.8)	155 (83.8)	
Yes	69 (14.6)	30 (16.2)		30 (16.2)	30 (16.2)	
Tumor differentiation			<0.001			0.91
Well/moderate	113 (23.9)	72 (38.9)		70 (37.8)	72 (38.9)	
Poor	359 (76.1)	113 (61.1)		115 (62.2)	113 (61.1)	
Metastatic site						
Largest size, cm			0.02			0.29
≤3	269 (57.0)	112 (60.5)		101 (54.6)	112 (60.5)	
>3	113 (43.0)	73 (39.5)		84 (45.4)	73 (39.5)	
Total numbers			0.38			0.62
≤5	384 (81.4)	145 (78.4)		140 (75.7)	145 (78.4)	
>5	88 (18.6)	40 (21.6)		45 (24.3)	40 (21.6)	
Distributions			0.43			0.46
Unilobar	290 (61.4)	107 (57.8)		99 (53.5)	107 (57.8)	
Bilobar	182 (38.6)	78 (42.2)		86 (46.5)	78 (42.2)	

PSM, propensity score matching; T, tumor.

Table S2 Baseline characteristics of patients with KRAS mutated-type tumors according to primary tumor sidedness

Characteristic	Before PSM			After PSM		
	Left sidedness (N=264), n (%)	Right sidedness (N=340), n (%)	P value	Left sidedness (N=256), n (%)	Right sidedness (N=256), n (%)	P value
Demographic factors						
Gender, male	166 (62.8)	186 (54.7)	0.04	160 (62.5)	144 (56.3)	0.15
Neoadjuvant chemotherapy	61 (23.1)	74 (21.8)	0.70	57 (22.2)	58 (22.7)	0.92
Adjuvant systemic treatment						
Post colectomy	175 (66.3)	233 (68.5)	0.56	170 (66.6)	175 (68.2)	0.64
Post hepatectomy	228 (86.3)	305 (89.7)	0.21	223 (87.3)	228 (89.2)	0.50
Synchronous disease	152 (57.6)	218 (64.1)	0.11	149 (58.2)	145 (56.6)	0.72
Colorectal site						
Tumor stage			0.02			0.36
T1–2	44 (16.7)	34 (10.0)		37 (14.5)	30 (11.7)	
T3–4	220 (83.3)	306 (90.0)		219 (85.5)	226 (88.3)	
Lymph node metastasis			0.61			0.78
Negative	93 (35.2)	113 (33.2)		89 (34.8)	92 (35.9)	
Positive	171 (64.8)	227 (66.8)		167 (65.2)	164 (64.1)	
Extrahepatic metastasis			0.59			0.37
No	218 (82.6)	275 (80.9)		211 (82.4)	203 (79.3)	
Yes	46 (17.4)	65 (19.1)		45 (17.6)	53 (20.7)	
Tumor differentiation			0.64			0.68
Well/moderate	201 (76.1)	253 (74.4)		63 (24.6)	58 (22.7)	
Poor	63 (23.9)	87 (25.6)		193 (75.4)	198 (77.3)	
Metastatic site						
Largest size, cm			0.44			>0.99
≤3	162 (61.4)	220 (64.7)		162 (63.2)	162 (63.2)	
>3	102 (38.6)	120 (35.3)		94 (36.8)	94 (36.8)	
Total numbers			0.004			>0.99
≤5	225 (85.2)	257 (75.6)		218 (85.2)	217 (84.8)	
>5	39 (14.8)	83 (24.4)		38 (14.8)	39 (15.2)	
Distributions			0.50			0.34
Unilobar	171 (64.8)	230 (67.6)		169 (66.0)	180 (70.3)	
Bilobar	93 (35.2)	110 (32.4)		87 (34.0)	76 (29.7)	

PSM, propensity score matching; T, tumor.

Table S3 Baseline characteristics of 200 patients for molecular analysis

Characteristic	Number of patients (%)		P value
	Left sidedness (n=140)	Right sidedness (n=60)	
Gender			0.42
Male	93 (66.4)	36 (59.6)	
Female	47 (33.6)	24 (40.4)	
Age of disease onset			0.75
Early onset*	26 (18.6)	10 (16.7)	
Later onset [#]	114 (81.4)	50 (83.3)	
Treatment prior liver resection			0.75
No	92 (65.7)	41 (68.3)	
Yes	48 (34.3)	19 (31.7)	
c/p T-stage			0.66
T1–2	18 (12.9)	9 (15.0)	
T3–4	122 (87.1)	51 (85.0)	
Nodal stage CRC			0.93
N0	26 (18.6)	9 (15.0%)	
N1	51 (36.4)	21 (35.0)	
N2	77 (55.0)	30 (50.0)	
Extrahepatic disease			0.52
No	120 (85.7)	49 (81.7)	
Yes	20 (14.3)	11 (18.3)	
Tumor differentiation			0.49
Moderate/well	107 (76.3)	43 (71.2)	
Poor	33 (23.7)	17 (28.8)	

*, ages younger than 50 years. [#], ages older than 50 years. c/p, clinical and pathology; T, tumor; CRC, colorectal cancer.

Table S4 Top50 mutated genes in two sided groups

Left sidedness	Right sidedness
<i>TP53</i>	<i>APC</i>
<i>APC</i>	<i>TP53</i>
<i>KRAS</i>	<i>KRAS</i>
<i>PIK3CA</i>	<i>SMAD4</i>
<i>SMAD4</i>	<i>PIK3CA</i>
<i>SOX9</i>	<i>TCF7L2</i>
<i>BRAF</i>	<i>FBXW7</i>
<i>FBXW7</i>	<i>SOX9</i>
<i>PTPRT</i>	<i>TTN</i>
<i>SOX9</i>	<i>NF1</i>
<i>PTPRS</i>	<i>FLG</i>
<i>ARID1A</i>	<i>ERBB4</i>
<i>ERBB4</i>	<i>AMER1</i>
<i>FAT1</i>	<i>CCDC168</i>
<i>NF1</i>	<i>PTPRT</i>
<i>PTEN</i>	<i>ARID1A</i>
<i>TCF7L2</i>	<i>KDM5A</i>
<i>AMER1</i>	<i>NRAS</i>
<i>BRCA2</i>	<i>CTNNB1</i>
<i>FLG</i>	<i>SYNE1</i>
<i>NOTCH3</i>	<i>ATM</i>
<i>DICER1</i>	<i>BRAF</i>
<i>PDGFR1</i>	<i>CARD11</i>
<i>SMAD2</i>	<i>CSMD1</i>
<i>SMARCA4</i>	<i>DNAH11</i>
<i>CARD11</i>	<i>EPHA5</i>
<i>CIC</i>	<i>ALK</i>
<i>EPHA3</i>	<i>CIC</i>
<i>MAP3K1</i>	<i>HMCN1</i>
<i>NOTCH2</i>	<i>RNF43</i>
<i>NRAS</i>	<i>BRCA2</i>
<i>POLE</i>	<i>CREBBP</i>
<i>ATRX</i>	<i>EP300</i>
<i>CSF3R</i>	<i>ERBB3</i>
<i>EPHA5</i>	<i>MUC16</i>
<i>ERBB3</i>	<i>PDE4DIP</i>
<i>FXOP1</i>	<i>PTPRS</i>
<i>GRIN2A</i>	<i>SMAD2</i>
<i>IK2F1</i>	<i>FAT1</i>
<i>KDM5A</i>	<i>KMT2C</i>
<i>MLL</i>	<i>MLL2</i>
<i>MLL3</i>	<i>NOTCH1</i>
<i>NOTCH1</i>	<i>NOTCH3</i>
<i>NOTCH4</i>	<i>OBSCN</i>
<i>SETD2</i>	<i>SMAD3</i>
<i>SF3B1</i>	<i>BPTF</i>
<i>SPEN</i>	<i>FLT4</i>
<i>ARID2</i>	<i>GRIN2A</i>
<i>ATR</i>	<i>NOTCH4</i>
<i>KDM5C</i>	<i>ZFH3</i>

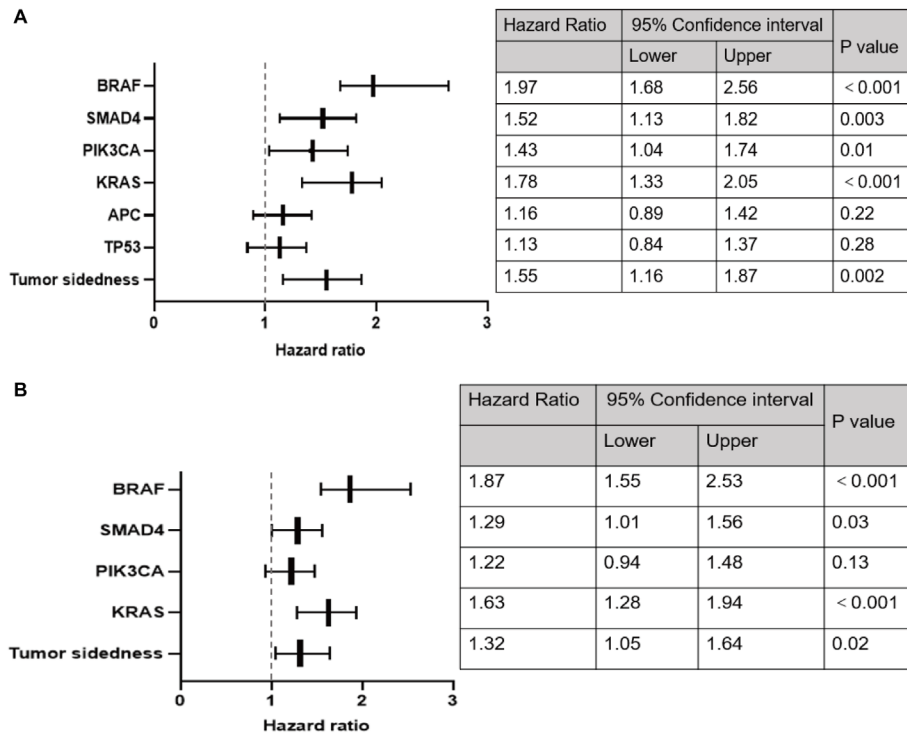


Figure S1 Cox regression analyses for overall survival. (A) Univariate analyses; (B) multivariate analyses.

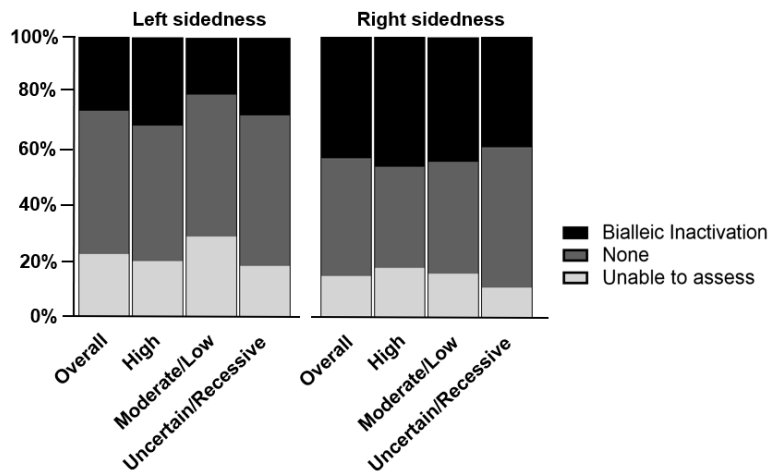


Figure S2 Pathogenic/likely pathogenic germline mutations with biallelic inactivation by sidedness group. (A) Left-sided group; (B) right-sided group.