

Clinical Science

Outcomes of colon resection in patients with metastatic colon cancer



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Abstract

BACKGROUND: Patients with advanced colorectal cancer have a high incidence of postoperative complications. We sought to identify outcomes of patients who underwent resection for colon cancer by cancer stage.

METHODS: The National Surgical Quality Improvement Program database was used to evaluate all patients who underwent colon resection with a diagnosis of colon cancer from 2012 to 2014. Multivariate logistic regression analysis was performed to investigate patient outcomes by cancer stage.

RESULTS: A total of 7,786 colon cancer patients who underwent colon resection were identified. Of these, 10.8% had metastasis at the time of operation. Patients with metastatic disease had significantly increased risks of perioperative morbidity (adjusted odds ratio [AOR]: 1.44, $P = .01$) and mortality (AOR: 3.72, $P = .01$). Patients with metastatic disease were significantly younger (AOR: .99, $P < .01$) had a higher American Society of Anesthesiologists score (AOR: 1.29, $P < .2$) and had a higher rate of emergent operation (AOR: 1.40, $P < .01$).

CONCLUSIONS: Overall, 10.8% of patients undergoing colectomy for colon cancer have metastatic disease. Postoperative morbidity and mortality are significantly higher than in patients with localized disease. Published by Elsevier Inc.

Colorectal cancer, with an estimated 150,000 new cases annually, is the 3rd most common malignant neoplasm and the 2nd leading cause of cancer deaths in the United States.^{1–3} Most patients in the United States who present

with stage IV disease will undergo noncurative primary resection of their tumor.⁴ The debate whether colectomy is the correct initial choice for these patients is significant given the lack of good outcomes data. Many patients with metastatic colorectal cancer have been debilitated by the advanced malignancy and associated chronic anemia and are estimated to have a high rate of postoperative complications.⁵ When considering surgery in a stage IV patient, it is important to fully understand the comparative acute outcomes of colectomy in these patients to guide clinician recommendations.

In the presence of localized colon cancer, the first-line treatment is usually resection. In patients with advanced metastatic disease, which is estimated to be 20% of cases,⁶

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the management becomes far more complicated and hotly debated. Some researchers have demonstrated that primary colectomy results in improved overall survival in patients with otherwise unresectable metastatic colon cancer and have been strong advocates of a surgical approach.^{7,8} However, opponents point out that resection of the primary tumor in metastatic unresectable cases can certainly delay chemotherapy.^{6,9} Other research has suggested that multi-agent cytotoxic and biologic chemotherapy treatment

alone does not compromise survival and asymptomatic patients should be spared noncurative surgical resection.¹⁰ This lack of definitive data has led to the call for a controlled trial comparing the outcomes of resection vs nonresection in asymptomatic stage IV colon cancer patients.⁴ There are limited published data regarding the comparative acute outcomes of surgery for patients with colon cancer stratified by cancer stage. The aim of this research is to evaluate the acute outcomes of surgery on

Table 1 Perioperative and demographic factors of colon cancer patients underwent colon resection

Variables	Stage 0–III (6,947), n (%)	Stage IV (839), n (%)	P value
Age, y			
Mean \pm SD, y	67 \pm 13	63 \pm 13	<.01
Median, y	68	63	<.01
Sex			
Female	3,512 (50.6)	423 (50.4)	.61
Race			
White	5,043 (82)	606 (81.7)	.99
Black or African American	698 (11.3)	97 (13.1)	.84
Asian	370 (6)	36 (4.9)	.95
Other	42 (.7)	3 (.4)	.84
Comorbidity			
Hypertension	3,924 (56.5)	388 (46.2)	.57
Diabetes mellitus	1,377 (19.8)	121 (14.4)	.03
Chronic obstructive pulmonary disease	424 (6.1)	45 (5.4)	.82
Chronic steroid use	237 (3.4)	36 (4.3)	.92
Congestive heart failure	103 (1.5)	5 (.6)	.07
Obesity	2,293 (33.4)	234 (28.4)	.41
Ascites	40 (.6)	24 (2.9)	<.01
Renal failure need to dialysis	58 (.8)	2 (.2)	.11
Weight loss	420 (6)	96 (11.4)	.09
Operation			
Elective	5,584 (80.4)	549 (65.6)	<.01
Nonelective	1,361 (19.6)	288 (34.4)	<.01
Operation time			
Mean \pm SD, min	164 \pm 84	197 \pm 114	<.01
Median	149	173	<.01
Surgical approach			
Open	2,083 (30)	481 (57.3)	<.01
Laparoscopic	4,862 (70)	358 (42.7)	<.01
Procedure			
Partial colectomy	6,758 (97.3)	812 (96.8)	.34
Total colectomy	189 (2.7)	27 (3.2)	.34
Emergent situations			
Obstruction	193 (2.8)	46 (5.5)	<.01
Perforation	59 (.8)	21 (2.5)	<.01
Bleeding	31 (.4)	5 (.6)	<.01
Other factors			
ASA score $>2^*$	4,158 (59.9)	540 (64.5)	.02
Preoperative sepsis	219 (3.2)	70 (8.3)	.47
Smoking	888 (12.8)	151 (18)	.23
Hypoalbuminemia	1,360 (26.7)	256 (36.8)	.14
Mechanical bowel preparation	3,939 (66.2)	432 (59.8)	.78
Oral antibiotic bowel preparation	1,968 (32.8)	188 (26.5)	.01
Preoperative chemotherapy (in 90 days of surgery)	197 (2.9)	164 (20)	<.01

ASA = American Society of Anesthesiologists; SD = standard deviation.

*The American Society of Anesthesiologists score more than two.

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