ORIGINAL ARTICLE

Risk factors associated with morbidity and mortality in emergency colorectal cancer resections

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ABSTRACT

BACKGROUND: Despite efforts toward early diagnosis, approximately 25% of patients with colorectal cancer are still operated on under emergency conditions. The aim of this study was to investigate the risk factors associated with morbidity and mortality in emergency colorectal cancer resections.

METHODS: Emergency colorectal cancer resections performed at a single center were included in this retrospective study. Baseline, operative, and tumor-related data were examined. Morbidity was defined as a complication of Clavien Dindo grade ≥3. Risk factors for both morbidity and mortality were evaluated using univariate analyses and multivariable logistic regression.

RESULTS: The study included 188 patients, of whom 119 (63.3%) were men. In the multivariate analysis, factors associated with increased morbidity risk were age (odds ratio [OR]=3.02, p=0.009), American Society of Anesthesiologists (ASA) score (OR=2.04, p=0.049), duration of surgery (OR=1.01, p=0.001), and presence of perforation (OR=3.24, p=0.004). Multivariate analysis for mortality demonstrated significant effects of age (OR=3.23, p=0.017), ASA score (OR=5.92, p=0.009), duration of surgery (OR=1.01, p=0.007), and presence of perforation (OR=3.01, p=0.013).

CONCLUSION: This study highlights several key risk factors—including advanced age (≥70 years), higher ASA scores (≥3), longer operative times, and the presence of perforation—that significantly impact morbidity and mortality in emergency colorectal cancer resections. Early recognition of these factors may improve risk stratification and guide more effective perioperative care strategies for high-risk patients.

Keywords: Colorectal cancer; emergency surgery; morbidity; mortality.

INTRODUCTION

Colorectal cancer (CRC) ranks third worldwide in terms of both the number of cancer diagnoses and cancer-related deaths.[1,2] Moreover, its incidence in Eastern Europe and Asia, including Türkiye, has been reported to be increasing.[3] Despite efforts toward early diagnosis, approximately 25% of patients are still operated on under emergency conditions.[3-7] The principal reasons requiring emergency surgery for colorectal tumors include local tumor invasion, regional progression, and medical or technical problems during the treatment process. In clinical practice, these conditions most commonly present as obstruction and perforation.[3,8,9] In emergency colorectal surgery, morbidity and mortality remain significantly higher compared to elective procedures and therefore deserve particular attention.[6,7,10]

Cite this article as: Kesgin YM, Dönmez T, Sürek A, Canöz Ö, Gümüşoğlu AY, Güzey D, et al. Risk factors associated with morbidity and mortality in emergency colorectal cancer resections. Başlık. Ulus Travma Acil Cerrahi Derg 2026;32:428-436.

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Ulus Travma Acil Cerrahi Derg 2026;32(4):428-436 DOI: 10.14744/tjtes.2025.63764

Submitted: 02.07.2025 Revised: 21.09.2025 Accepted: 22.11.2025 Published: 13.04.2026

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Identifying risk factors, determining both global and local rates for morbidity and mortality, and performing appropriate risk stratification in emergency colorectal cancer surgery are essential for improving patient management. This approach may help identify patients who could benefit from additional treatments and closer postoperative follow-up.[5,6,11] In addition, operative mortality is considered an important indicator for evaluating surgical performance and quality of care.[4]

The aim of our study was to investigate the risk factors associated with morbidity and mortality in patients who underwent emergency resection for colorectal cancer in our clinic.

MATERIALS AND METHODS

Patients who underwent emergency colorectal cancer resection at a single tertiary referral center between January 2019 and December 2022 were included in this retrospective study. All patients were aged 18 years or older. Approval for the study was obtained from the Institutional Ethics Board of Istanbul Bakirkoy Dr. Sadi Konuk Training and Research Hospital (Date: 17.07.2023, Decision no: 2023-14-13). The study was registered in the Clinical Trials Protocol Registration and Results System (Trial ID: NCT06074432). The study was conducted in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement and complied with the principles of the Declaration of Helsinki.

Patients were excluded from the analysis if they met any of the following criteria: undergoing surgery without resection or undergoing surgery for indication other than primary colorectal cancer, such as diverticulitis, ischemia, inflammatory bowel diseases, or metastases from another malignancy. All data were obtained from the hospital software system, and informed consent was obtained from all patients. Surgical procedures were performed by general surgeons.

Factors such as age, sex, body mass index (BMI), American Society of Anesthesiologists (ASA) score, Charlson Comorbidity Index (CCI), smoking status, comorbidity history, presence of perioperative blood transfusion, duration of surgery, length of hospital stay, tumor location and characteristics, presence of perforation, and stoma/anastomosis preference were evaluated. During the analysis of ASA scores, patients were divided into two subgroups: ASA I–II and ASA III or higher. Tumors located distal to the midpoint of the transverse colon were classified as left-sided, whereas tumors located proximal to this point were classified as right-sided. Nutrition Risk Screening (NRS-2002) scores recorded at hospital admission were also included in the analyses. For morbidity assessment, complications with a Clavien–Dindo score of ≥3 were considered significant.

Risk factors for both morbidity and mortality were first evaluated using univariate analyses. Variables found to be significantly associated with morbidity and mortality were included in multivariate logistic regression analyses. Pearson's chi-square test, Student's t-test, and the Mann–Whitney U test were used where appropriate. Normality of distribution was assessed using the Kolmogorov–Smirnov test. Normally distributed values expressed as mean ± standard deviation (SD). Variables that did not show a normal distribution were expressed as median and 25th-75th interquartile range values (median (IQR25th-75th)). The effects of risk factors on morbidity and mortality were expressed as odds ratios (OR) with their 95% confidence intervals (CI). A p value of <0.05 was considered statistically significant. Statistical analyses were performed using SPSS for Windows, version 29.0 (SPSS, Chicago, IL, USA).

RESULTS

During the four-year study period, 222 patients who underwent surgery for an emergency colorectal mass were identified; however, 34 patients were excluded from the study according to the exclusion criteria (Fig. 1).

The study was conducted with the remaining 188 patients, of whom 69 (36.7%) were women (Table 1). Perforation was detected in 42 patients (22.3%). Among these, perforation was located at the tumoral segment in 35 patients (83.3%), whereas seven patients (16.6%) had perforation proximal to the tumor site. Patients with perforation were similar to those without perforation in terms of age (p=0.658), BMI (p=0.273), CCI score (p=0.680), diagnosis of diabetes mellitus (DM) (p=0.515), duration of surgery (p=0.245), tumor stage (p=0.508), presence of metastasis (p=0.372), and total lymph node count (p=0.365).

Among the patients, primary anastomosis was the more frequently performed procedure (61.17%, n=115). Anastomotic leakage occurred in 13 of these patients (11.3%). In the leakage subgroup, seven patients died, corresponding to 6.08% of the anastomosis group. The overall morbidity rate was 36.1% (n=68), and the 90-day mortality rate was 23.9% (n=45).

In the univariate analysis, morbidity was associated with age (>70 years), ASA score (≥3), CCI score (≥4), hypertension, duration of surgery, presence of perforation, and total lymph node count (Table 2). Four of these seven predictive variables were statistically significant in the multivariate analysis (Table 2). The presence of perforation was associated with a threefold increase in the odds of morbidity. Similarly, age over 70 years was associated with a similar increase in risk. The odds of morbidity increased by 1% for each additional minute of surgery.

On the other hand, eight factors were significantly associated with mortality (Table 3). Of these variables, only age, ASA score, duration of surgery, and presence of perforation were statistically significant in the multivariate analysis (Table 3). The results showed that both perforation and age over 70 years increased the odds of mortality approximately threefold. Similar to morbidity, each additional minute of surgery was associated with a 1% increase in the odds of mortality.

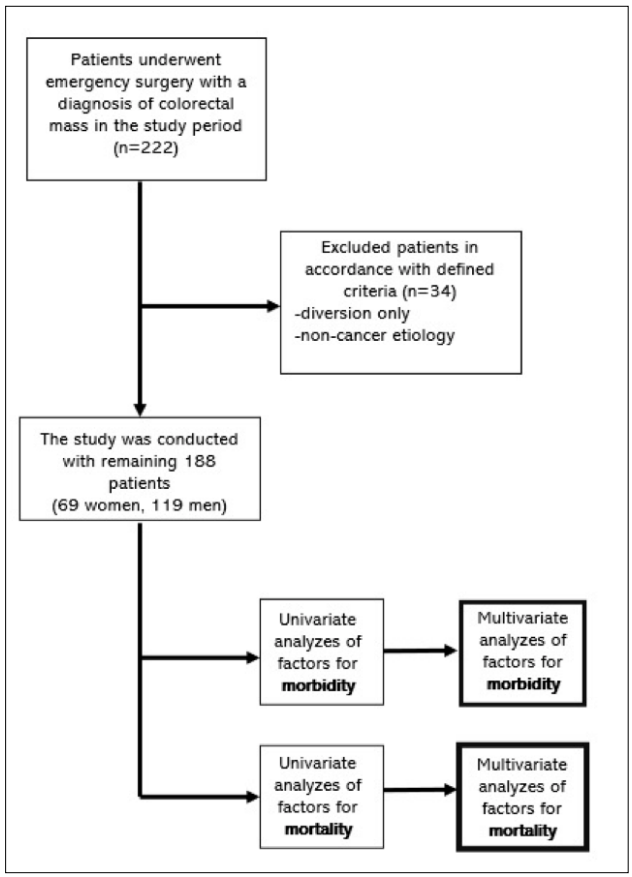


Figure 1. Flowchart diagram of the study.

DISCUSSION

In this study, emergency colorectal cancer resections were associated with mortality and morbidity rates of 23.9% and 36.1%, respectively. Perforation, age over 70 years, ASA score ≥3, and longer operative time were identified as risk factors. The morbidity rate observed in our study is consistent with findings reported in the literature.[5,12,13] However, the mortality rate appears to be slightly higher than those reported in similar studies.[5,12-14] In our study, patients with other diagnoses such as diverticulitis or colitis, as well as those who did not undergo resection, were excluded. Considering that all included patients underwent resection and were histopathologically confirmed to have colorectal cancer, it is reasonable that these rates might be higher. Previous studies have also reported that undergoing colectomy for colorectal cancer is a predictor of mortality.[13,15]

Several studies have reported that patients presenting with colonic perforations experience highly morbid and fatal surgical outcomes.[16-18] In the present study, perforation (n=42, 22.3%) was also strongly associated with worse outcomes in terms of both morbidity and mortality. According to the World Society of Emergency Surgery (WSES) Guidelines, perforation most commonly occurs at the tumor site (70%), while the remaining cases occur more proximally.[3] In our

Table 1. Baseline characteristics of the patients

Variable	n (%)
Age	
≤70	83 (44.1)
>70	105 (55.8)
Sex, n (%)	
Female	69 (36.7)
Male	119 (63.3)
BMI, n (%)	
<18.5	3 (1.6)
18.5-24.9	71 (37.8)
25-29.9	68 (36.2)
≥30	46 (24.5)
ASA score, n (%)	
I–II	55 (29.3)
III–IV	33 (70.7)
CCI score	
≤III	55 (29.3)
≥IV	133 (70.7)
Smoking history	50 (26.6)
Hypertension (HT)	72 (38.3)
Diabetes mellitus (DM)	40 (21.3)
Chronic obstructive pulmonary disease (COPD)	14 (7.4)
Chronic renal failure (CRF)	11 (5.9)
Cerebrovascular accident (CVA)	11 (5.9)
Congestive heart failure (CHF)	29 (15.4)
Presence of perforation	42 (22.3)
Type of surgery	
Resection + stoma	73 (38.8)
Resection + anastomosis	115 (61.1)
T stage	
T1-2	8 (4.3)
T3-4	180 (95.7)
Grade	
I	11 (5.9)
II	141 (75.0)
III	36 (19.1)
Stage	
I-II	78 (41.5)
III-IV	110 (58.5)
Tumor location	
Right-sided	44 (23.4)
Left-sided	144 (76.6)

Older men constituted the predominant patient group in the study. A considerable proportion of patients were obese (24.5%). Hypertension was the most common comorbidity, followed by diabetes mellitus. Perforation was detected in 22.3% of patients (n=42). Although the majority of patients were elderly and had multiple comorbidities, anastomosis was preferred over stoma formation in more than 60% of patients.

Table 2. Univariate and multivariate analyses of factors associated with morbidity

Variable	No major complication n=120 (%)	Major complication n=68 (%)	Univariate analysis	Multivariate analysis	OR	95% CI
Age						
≤70	64 (53.3)	19 (27.9)				
>70	56 (46.7)	49 (72.1)	<0.001*	0.009	3.02	1.31-6.95
Sex, n (%)						
Male	75 (62.5)	44 (64.7)	0.763*			
Female	45 (37.5)	24 (35.3)				
BMI, n (%)						
<18.5	2 (1.7)	1 (1.5)	0.530*			
18.5-24.9	43 (35.8)	28 (41.2)				
25-29.9	48 (40)	20 (29.4)				
>30	27 (22.5)	19 (27.9)				
ASA score, n (%)						
I–II	45 (37.5)	10 (14.7)	<0.001*	0.049	1.01	1.00-5.95
III–IV	75 (62.5)	58 (85.3)				
CCI score						
≤3	43 (35.8)	12 (17.6)	0.008*	0.798	0.87	0.31-2.41
≥4	77 (64.7)	56 (82.4)				
Smoking history	37 (30.8)	13 (19.1)	0.081*			
NRS-2002 score						
<3	99 (82.5)	56 (82.4)				
≥3	21 (17.5)	12 (17.6)	0.980*			
Hypertension	37 (30.8)	35 (51.5)	0.005*	0.132	1.82	0.83-4.01
Diabetes mellitus	22 (18.3)	18(26.5)	0.190*			
Chronic obstructive pulmonary disease	6 (5.0)	8 (11.8)	0.090*			
Chronic renal failure	6 (5.0)	5 (7.4)	0.509*			
Cerebrovascular accident	6 (5.0)	5 (7.4)	0.509*			
Congestive heart failure	14 (11.7)	15 (22.1)	0.058*			
Tumor location						
Right	29 (24.2)	15 (22.1)	0.743*			
Left	91 (75.8)	53 (77.9)				
Duration of operation (min)	176.75±51.46	200.44±54.47	0.003**	0.001	1.01	1.00-1.01
Perioperative blood transfusion	55 (45.8)	35 (51.5)	0.457*			
Perforation	18 (15)	24 (35.3)	0.001*	0.004	3.24	1.46-7.16
Type of surgery						
Resection + stoma	50 (35.5)	23 (48.9)	24 (51.1)	0.101*		
Resection + anastomosis		91 (64.5)				
Tumor length (cm) median	3.90 (2.65-4.50)	4 (3.00-5.00)	0.239***			
Tumor diameter (cm)	4.67±1.77	4.79±1.64	0.673**			
T stage						
T1-2	6 (5.0)	2 (2.9)	0.713*			
T3-4	114 (95.0)	66 (97.1)				
Total lymph node count, mean±SD	25.94±12.92	22.15±11.08	0.043**	0.310	0.98	0.95-1.01
Metastatic lymph nodes,	2.11±3.44	2.28±3.66	0.750**			
Grade						
I	6 (5.0)	5 (7.4)				
II	93 (77.5)	48 (70.6)				
III	21 (17.5)	15 (22.1)	0.560*			
Stage						
I-II	50 (41.7)	28 (41.2)				
III-IV	70 (58.3)	40 (58.8)	0.948*			

*Chi-square test; **Student's t-test; ***Mann–Whitney U test.

Table 3. Univariate and multivariate analyses of factors associated with mortality

	Alive n=143 (%)	Death n=45 (%)	Univariate analysis	Multivariate analysis	OR	95% CI
Age						
≤70	72 (50.3)	11 (24.4)	0.002*	0.017	3.23	1.23-8.52
>70	71 (49.7)	34 (75.6)				
Sex n (%)						
Male	92 (64.3)	27 (60.0)				
Female	51 (35.7)	18 (40.0)	0.189*			
BMI						
<18.5	3 (2.1)	0 (0)				
18.5-24.9	54 (37.8)	17 (37.8)				
25-29.9	52 (36.4)	16 (35.6)				
≥30	34 (23.8)	12 (26.7)	0.785*			
ASA score						
I–II	52 (36.4)	3 (6.7)				
III–IV	91 (63.6)	42 (93.3)	<0.001*	0.009	5.92	1.55-22.65
CCI score						
≤3	48 (33.6)	7 (15.6)				
≥4	95 (66.4)	38 (84.4)	0.021**	0.375	2.49	0.16-1.98
Duration of operation (min)	179.02±47.47	201.89±59.18	0.009***	0.007	1.01	1.00-1.01
Perioperative blood transfusion	67 (46.9)	23 (51.1)	0.618*			
Smoking history	40 (28.1)	10 (22.2)	0.446*			
NRS-2002 score						
<3	118 (82.5)	37 (82.2)				
≥3	25 (17.5)	8 (17.8)	0.964*			
Hypertension	47 (32.9)	25 (55.6)	0.006*	0.124	2.03	0.82-5.05
Diabetes mellitus	28 (19.6)	12 (26.7)	0.311*			
Chronic obstructive pulmonary disease	7 (4.9)	7 (15.6)	0.018*	0.206	2.30	0.63-8.40
Chronic renal failure	6 (4.2)	5 (11.1)	0.085*			
Cerebrovascular accident	8 (5.6)	3 (6.7)	0.789*			
Congestive heart failure	21 (14.7)	8 (17.8)	0.616*			
Perforation	25 (17.5)	17 (37.8)	0.004*			
Type of surgery						
Resection + stoma	41 (34.2)	32 (47.1)				
Resection + anastomosis	79 (65.8)	36 (52.9)	0.081*			
T stage						
T1-2	6 (4.2)	2 (4.4)				
T3-4	137 (95.8)	43 (95.6)	0.943*			
Grade						
I	7 (4.9)	4 (8.9)				
II	110 (76.9)	31 (68.9)				
III	26 (18.2)	10 (22.2)	0.468*			
Stage						
I-II	58 (40.6)	20 (44.4)				
III-IV	85 (59.4)	25 (55.6)	0.645*			
Tumor location						
Right-sided	32 (22.4)	12 (26.7)				
Left-sided	111 (77.1)	33 (73.3)	0.553*			
Metastatic lymph nodes median	1 (0-3)	1 (0-2.5)	0.916***			
Total lymph node count median	23 (16-31)	20 (14-25)	0.038***	0.376	0.98	0.95-1.01
Tumor length (cm) median	4 (2.5-4.5)	4 (3-5)	0.259***			
Tumor diameter (cm) median	4.5 (4-5)	5 (3.5-6)	0.249***	0.013	3.01	1.26-7.17

*Chi-square test; **Student's t-test; ***Mann–Whitney U test.

study, more than 80% of perforations were located at the tumor site. Age was also found to have a statistically significant relationship with both morbidity and mortality in the multivariate analyses, which is consistent with findings in the literature.[19] Elderly patients are known to be more vulnerable to intra-abdominal sepsis. The counterbalancing of septic stimuli by anti-inflammatory mechanisms may often be inadequate in this population.[14] Aging has also been associated with decreased physiological reserve and a higher burden of comorbidities, both of which may contribute to increased morbidity and mortality.[20] In the context of our study results, however, comorbidity scores did not show a significant effect on outcomes in the multivariate analyses. Therefore, the concept of physiological reserve, often described as an "elusive concept," may be particularly relevant. Physiological reserve has been defined as the ability of an organism to cope with stressors.[21] Although reserve capacity may be partially improved under certain conditions, emergency surgery generally provides limited opportunity for preoperative optimization. Nevertheless, the recommendation of the American Geriatrics Society should be emphasized: frailty assessment should be documented at hospital admission in elderly patients undergoing emergency surgery.[22] On the other hand, sex was not found to be significantly associated with outcomes in our study, which is consistent with the findings of several previous studies.[11,12]

In another study designed similarly to ours, risk factors were evaluated in three main contexts: patient-related factors, septic consequences of the disease, and the effects of the surgical procedure itself.[4] In the same study, it was noted that the third category is relatively neglected in many scoring systems. Blood transfusion is one of the factors within this category. Skala et al.[4] reported that blood loss and blood transfusion were associated with mortality; however, this association was not confirmed in multivariate analyses in the same study. In our study, blood transfusion was not found to be significantly associated with morbidity or mortality. While some studies have reported no serious adverse effects related to blood transfusion,[13,23] others have demonstrated a significant association with morbidity and mortality, even in multivariate analyses.[5,12,24] Various explanations have been proposed for this effect. Perioperative bleeding, which is an important indication for blood transfusion, may be related to patient-related factors such as malnutrition, portal hypertension, anticoagulant therapy, or liver failure.[4] Additionally, transfusion-related immunomodulation (TRIM) has been suggested as a possible mechanism contributing to adverse outcomes, particularly in this frail population with a high mean age.[24]

It may be useful to briefly address the scoring systems mentioned above. When the Physiological and Operative Severity Score for the Enumeration of Mortality and Morbidity (POSSUM) classification was first introduced, it was suggested that although several classifications existed for predicting mortality, morbidity had largely been neglected.[25] Today, however, a substantial body of evidence evaluating morbidity is available. Since then, several well-known variants of POSSUM have been developed, and multiple comparisons and evaluations have been conducted.[15,26-30] Furthermore, other classification systems have been introduced, and modified versions of these systems have also been proposed.[28,31,32] It is beyond the scope of this article to compare scoring systems or to determine which system overestimates or underestimates morbidity and mortality in emergency surgery patients. Nevertheless, all of these efforts reflect an attempt to improve predictive accuracy, better understand patient risk, and ultimately enhance the "quality of care".[25] Given the limitations of time and available resources, clinicians aim to understand the patient as accurately as possible using the fewest variables. The search for the most reliable predictive tools therefore continues.[33] Insights gained from these efforts may help guide surgical training and contribute to the evaluation of surgical quality.[11] Accurate risk assessment is also essential for providing realistic and up-to-date information to patients and their relatives.[6,26,34] Since our study also investigates potentially modifiable factors, adherence to Enhanced Recovery After Surgery (ERAS) recommendations may be beneficial.[6] Although global risk scales are important, the region and institution in which clinicians practice may have unique characteristics. Therefore, the availability of local data may also contribute to areas such as resource allocation and sustainable accountability.

ASA scores of III or IV were associated with higher mortality compared with lower ASA scores. Similarly, Skala et al.[4] reported that when the ASA score was ≥3, mortality rates approached nearly 25%, whereas the same rate was only 1–2% for patients with ASA ≤II. Another study has reported similar results.[31] Despite these findings, the possibility of interobserver variability should be considered when interpreting ASA scores, and clinical judgment should also be taken into account.[33] In terms of preexisting comorbidities, chronic obstructive pulmonary disease (COPD) was associated with mortality in the univariate analysis; however, this relationship was not supported in the multivariate analysis in our study. In another study including both elective and emergency patients, chronic lung disease was significantly associated with in-hospital mortality.[35]

Morbidity was associated with several factors in the univariate analyses. Factors such as age, ASA score, CCI score, and hypertension (HT) were patient-related and preexisting predictors of morbidity. Regarding disease-related factors, perforation, longer operative time, and total lymph node count were associated with worse outcomes. However, as wisely noted by Skala et al.,[4] correlation and causation represent different aspects of reality. Therefore, we cannot modify certain factors associated with outcomes, such as lymph node count, age, and preexisting comorbidities. On the other hand, the septic consequences of perforation may be partially modifiable. As demonstrated in the study by Krutsri et al.,[20]

rapid identification of patients requiring emergency colorectal surgery and completion of the necessary preoperative steps within specific time frames may reduce adverse outcomes. Acting promptly and appropriately may provide an opportunity to intervene before perforation occurs. Alternatively, even if perforation has already occurred before intervention, the severe septic consequences may be minimized. Additionally, factors directly related to the surgical procedure itself should not be neglected when evaluating modifiable variables.[4]

In our results, the duration of surgery was associated with adverse outcomes in both morbidity and mortality analyses. Previous studies have reported that prolonged operations are associated with higher intraoperative and postoperative complication rates.[15] However, some studies have reported conflicting findings.[4] Differences in study design may explain these discrepancies. Variables such as the type of surgery (emergency versus non-emergency) and the presence of perforation can, of course, affect the duration of surgery. The study by Skala et al.[4] is an example of a dissimilar result; however, that study included indications other than cancer, such as diverticulitis, the tumoral perforation rate was not reported, and some of the cases were non-emergency. Another example is the study by Abd-El-Aal et al.,[12] which included patients with a relatively low rate of diagnosed cancer. In that study, univariate analyses showed a significant relationship between operative duration and morbidity and mortality, whereas multivariate analyses did not. Therefore, factors related to study design may explain these differences. Naturally, more robust studies are needed. However, operative duration itself may not necessarily have a direct causal relationship with morbidity and mortality. Rather, it may represent another potential outcome and indicator of factors that contribute to morbidity and mortality. A recent study also identified prolonged surgery, blood loss, and the need for transfusion as indicators of difficult surgery.[36]

In most studies on emergency colorectal cancer surgery, nutritional evaluation was either not performed or albumin levels were primarily used as the basis for assessment.[20,23,34] However, we concluded that albumin may be misleading, considering that it is also a negative acute-phase reactant and that our patients undergo emergency surgery. This issue has also been highlighted in another study.[32] Wexner also noted that measuring albumin levels and considering them as a variable that can be rapidly modified is problematic.[11] In some studies, questionnaires were preferred to assess malnutrition instead of albumin levels.[15] In our study, we preferred the Kondrup score, also known as the NRS-2002 score, to evaluate malnutrition. To the best of our knowledge, our study is the only one investigating the relationship between the NRS-2002 score and outcomes of emergency colorectal cancer surgery. In univariate analyses, the NRS-2002 score was significantly associated with both morbidity and mortality; however, multivariate logistic regression analyses did not support this finding.

The retrospective nature of this study is the most prominent limitation. As the aim was to identify modifiable factors, the lack of data on "delay to operation" may also be considered another limitation. Furthermore, findings from a single tertiary referral center may not be easily generalizable to hospitals at different levels. However, conducting the study with a specific and relatively homogenous patient group may increase the generalizability of the results. Additionally, the use of a specific scoring system in a study focused on this particular patient population may contribute to more comparable findings in the literature. Despite these limitations, the detailed results of a considerable number of patients, analyzed through multi-stage methods and including variables that have been relatively neglected in previous studies, represent important strengths of this study.

CONCLUSION

This study highlights several significant risk factors contributing to morbidity and mortality in patients undergoing emergency colorectal cancer resections. Early identification of these well-defined risk factors may help stratify patients at higher risk and optimize management strategies. When a patient with colorectal cancer presents as an emergency case, early risk stratification is crucial, and institutional protocol-based processes with time-bound targets should be established. Once a patient is identified as high risk, close monitoring and intensive treatment are recommended to improve clinical outcomes. Emergency resections carry a high risk of complications and mortality, particularly in elderly patients, those with higher ASA scores, prolonged operative durations, and perforations. These patients may benefit from targeted perioperative strategies and closer postoperative surveillance.

Acknowledgments: Many thanks to Prof. Dr. Ali Güner for reviewing the draft of the article and providing valuable comments, particularly regarding the statistical analysis.

Ethics Committee Approval: This study was approved by the Institutional Ethics Board of Istanbul Bakirkoy Dr. Sadi Konuk Training and Research Hospital Ethics Committee (Date: 17.07.2023, Decision No: 2023-14-13).

Peer-review: Externally peer-reviewed.

Preprint Version: Our study was automatically forwarded to Research Square, a platform hosting preprint versions of studies, by a previous publisher to which the manuscript had been submitted for publication. This preprint version has the DOI number 10.21203/rs.3.rs-3645165/v1. The study was conducted using real patient data collected at our institution. Any potential high similarity score resulting from the preprint version mentioned above should therefore be disregarded.

Authorship Contributions: Concept: Y.M.K., T.D., A.S., A.Y.G.; Design: Y.M.K., T.D., A.S., A.Y.G.; Supervision: M.K., D.G., T.D., A.S.; Data collection and/or processing: D.G., Y.M.K.; Analysis and/or interpretation: D.G., M.K., Y.M.K.,

A.S., T.D.; Literature review: Y.M.K., O.C., A.Y.G., A.S., D.G., M.K., T.D.; Writing: Y.M.K., O.C., A.Y.G., A.S.; Critical review: Y.M.K., O.C., T.D., A.S., D.G., A.Y.G., M.K.

Conflict of Interest: None declared.

Financial Disclosure: The author declared that this study has received no financial support.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Kolorektal kanserin acil rezeksiyonlarında morbidite ve mortalite ile ilişkili risk faktörleri

AMAÇ: Erken tanı için gösterilen tüm çabalara rağmen kolorektal kanser hastalarının dörtte biri hala acil şartlarda ameliyat edilmektedir. Çalışmamızın amacı acil kolorektal kanser rezeksiyonlarında morbidite ve mortalite ile ilişkili risk faktörlerini araştırmaktır.

GEREÇ VE YÖNTEM: Tek bir referans merkezde acil şartlarda yapılan kolorektal kanser rezeksiyonlarının retrospektif değerlendirmesi ile yapılan bu çalışmada, hastalara ait demografik veriler, perioperatif özellikler ve detayların yanı sıra tömür karakteristikleri incelendi. Çalışmamızda morbidite varlığı Clavien-Dindo ≥3 komplikasyon olarak tanımlandı. Hem morbidite hem de mortalite açısından önce tek değişkenli analizler ve ardından çok değişkenli lojistik regresyon testleri ile risk faktörleri araştırıldı.

BULGULAR: Çalışmamız %63'ü (119 hasta) erkek olmak üzere toplam 188 hasta ile gerçekleştirildi. Çok değişkenli analizlerde morbidite riski ile ilişkili faktörler yaş (OR=3.02, p=0.009), ASA skoru (OR=1.01, p=0.049), ameliyat süresi (OR=1.01, p=0.001) ve perforasyon varlığıydı (OR, 3.24, p=0.004). Mortalite için yapılan çok değişkenli analizde yaşın (OR, 3.23, p=0.017), ASA'nın (OR, 5.92, p=0.009), ameliyat süresinin (OR, 1.01, p=0.007) ve perforasyon varlığının (OR, 3.01, p=0.013) mortalite gelişimi ile anlamlı bir ilişkiye sahip olduğu tespit edildi.

SONUÇ: Bu çalışma, acil kolorektal kanser rezeksiyonları geçiren hastalarda morbidite ve mortaliteye katkıda bulunan birkaç önemli risk faktörünü vurgulamaktadır. Yaşın yetmiş üzerinde olması, üç ve üzerinde ASA skoru, ameliyat süresinin uzun olması ve perforasyon varlığı hem morbidite hem de mortalite sonuçlarını kötü etkileyen temel faktörler olarak belirlenmiştir. Bu risk faktörlerinin erken tanımlanması, daha yüksek risk altındaki hastaların belirlenmesi ve bu sayede hasta yönetiminin geliştirilmesine imkan tanıyacaktır. Yüksek morbidite ve mortalite oranları göz önüne alındığında, kolorektal acillerde özellikle yaşlı, daha yüksek ASA skorlarına sahip, ameliyatın uzadığı ve perforasyon tespit edilmiş hastaların yakından izlem gerektirdiği ve bu özelliklere sahip hastalarda daha dikkatli bir perioperatif bakımın faydalı olabileceği akılda tutulmalıdır.

Anahtar sözcükler: Acil cerrahi; kolorektal kanser; morbidite; mortalite.

Ulus Travma Acil Cerrahi Derg 2026;32(4):428-436 DOI: 10.14744/tjtes.2025.63764