

The results of emergent curative surgery for the colorectal cancer; a single center experience of 52 patients

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Abstract

Aim: Even though, protective methods and early diagnostic modalities are used in current practice, almost 6 to 30% of colorectal cancer patients admit to hospital for emergency operation with late complications.

The aim of this study is to interpreting data of the early postoperative oncologic outcomes of the emergent curative CRC surgeries.

Material and Methods: Between January 2012 and January 2017, 173 patients were operated curatively for colorectal cancer at Mehmet Akif İnan Training and Research Hospital of Health Sciences University. Of these, 52 patients were treated with emergent curative colorectal surgery. Demographics, laboratory, and clinical data, diagnostic studies, surgical procedures, operative findings, histopathologic results, postoperative complications, and patient follow-up were retrospectively analyzed.

Results: The mean age (59.6 ± 10.9 vs. 57.7 ± 11.5 , $P = 0.98$) and gender (71.15 vs. 76.03% male, $P = 0.18$) were close in emergent and elective colorectal cancer surgery groups. Early postoperative mortality was seen in 6 (11.5%) of those patients. The mean postoperative hospital stay in emergent surgery group was significantly longer than in elective surgery group. The 2-years overall survival rate of emergent and elective group were estimated 33 versus 77%, respectively.

Conclusion: Our findings reveal that emergency CRC surgery predicts more advanced disease and longer operation time. Also in the emergent group have a higher complication rates, longer hospital stay, increased early postoperative morbidity, and lower long term survival in even all same stages.

Keywords: Colorectal Cancer; Emergent; Curative Surgery.

INTRODUCTION

Colo-rectal cancer (CRC) is described as the third common cause of cancer in the world, and also it is one of the main reasons of cancer related morbidity and mortality (1). CRC is defined as the second cause of death in both sexes (2).

Even though, protective methods and early diagnostic modalities are used in practice, exactly 6 to 30% of colorectal cancer patients admit to hospital for emergency operation with late complications.

Small proportion of these patients are submitted to curative surgery because these patients generally at advanced stage at the time of admission to the hospital (3). When compared to elective CRC surgery, emergency CRC surgery had worse results (4,5,6). Furthermore R1 resection margins are more common in the emergency surgery group than elective surgery group (10% versus 1%) (7).

The aim of this study is to interpreting data of the early postoperative oncologic outcomes of the emergent

curative CRC surgery.

MATERIAL and METHODS

After approval of local ethical committee, we recorded the data included prospectively in the database of patients operated for colorectal cancer surgery. Between January 2012 and January 2017, 173 patients were operated curatively for colorectal cancer at the Mehmet Akif İnan Training and Research Hospital of Health Sciences University. The informed consent was taken from all patients. Of these, 72 patients underwent to emergent colorectal surgeries and also of these, 52 patients were treated with emergent curative colorectal surgery. Demographics, laboratory, and clinical data, diagnostic studies, surgical procedures, operative findings, histopathologic results, postoperative complications, and patient follow-up were retrospectively analyzed.

All the patients had preoperative abdomen computerized tomography (CT). The diagnose of curative colorectal cancer surgery has been identified in case of pathologically

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R0 resection with proximal, distal and radial surgical margin and also with removal of at least 12 lymph nodes with surgical specimen. Postoperative follow-up was performed at 1 months, 3 months, 6 months, one year, and then annually thereafter by clinic, laboratory and radiological results.

Exclusive criteria of this study were insufficient radial margin or inadequate number of lymph nodes (below the 12 lymph node), pathologically microscopic or macroscopic positive surgical margin (R1 or R2 resection), distant metastasis, implementation of palliative therapy because of local advanced disease (colostomy or stent placement).

Statistical Analysis

SPSS for Windows programme was used to performed the data analysis, (version 16.0, Chicago, IL, USA). Fisher's exact test or Pearson Chi Square test was used to compared the categorical variables. Then Student t test or the Wilcoxon rank test was used for continuous variables. Survival was calculated using the Kaplan–Meier test and log-rank test was used to compare the groups. A probability value of <0.05 was considered significant.

RESULTS

Patients characteristics

Curative colorectal cancer surgery was performed to 173 colorectal cancer patients in our department between January 2012 and January 2017. 52 (30.05%) of them were emergent curative CRC cases. The mean age (59.6 ± 10.9 vs. 57.7 ± 11.5, P = 0.98) and gender (71.15 vs. 76.03% male, P = 0.18) were similar in emergent and elective colorectal cancer surgery groups (Table 1).

Table 1. Demographics and clinical characteristics of the patients

Parameters	Emergent group (n=52)	Elective group (n=121)	P value
Mean age ± SD years	59.6 ± 10.9	57.7 ± 11.5	0.98
Gender (male, %)	37 (71.15)	98 (76.03)	0.18
ASA class III (%)	30 (57.7)	49 (40.5)	0.038
Perop Transfusion(%)	10 (19.2)	11(9.9)	0.018
Mean perop blood loss (ml)	373.8±498.8	208.8±202.3	<0.05
Mean operation time (minute)	232.4±75.2	127.4±45.1	<0.05
Ostomy (%)	22 (42.3)	13(10.7)	<0.0001
ICU (%)	34 (65.4)	30 (24.7)	<0.0001
Surgical complication (%)	32 (61.5)	24 (19.8)	<0.0001
Early mortality (%)	6 (11.5)	8(6.6)	<0.0001
Hospital stay ± SD days	15.2 ± 5.8	7.46± 2.2	<0.0001

ICU: intensive care unit

Surgical outcomes

Emergent curative CRC surgery was performed for acute intestinal obstruction for the majority of patients (50 (96.2%)) and intestinal bleeding in 2 (3.8%) of the remaining patients. Diagnostic methods that used in the emergent curative CRC surgery group were abdominal computed

tomography (CT) with intravenous contrast in 45 (97.5%) patients and explorative laparotomy in 7 (13.4%) patients. Colonoscopy is the most preferred diagnostic method in elective curative CRC surgery group.

Tumor localizations ratio and comparison of tumor localizations was demonstrated in Table 2. Emergent curative CRC surgery group has higher ratio of sigmoid and rectosigmoid tumors rather than elective surgery patients. Additionally, rectal tumor ratio was significantly lower in emergent curative CRC surgery group than elective surgery patients (Table 2).

Table 2. Comparison of tumor localizations between groups

Localization	Emergent group n, (%)	Elective group n, (%)	p
Cecum or ascending colon	13 (25)	29 (13.9)	0.03
Transverse colon	5 (7.9)	11 (9)	0.75
Descending colon	4 (7.6)	6 (4.9)	0.3
Sigmoid	21 (40.3)	32 (26.4)	0.02
Rectum	9 (17.3)	43 (35.5)	<0.001

Italic values indicate statistical significance, P < 0.05 for each comparisons

Post- operative outcomes

Post- operative surgical complications were seen in 32 (61.5%) of patients in emergent curative CRC surgery group. The most frequently seen was surgical site infection in 18 (34.6%) patients and then anastomotic leakage in 6 (11.5%), stoma-related complications in 5 (9.6%) , early ileus in 3 (5.7%) patients, respectively. In 6 (11.5%) of these patients, early postoperative mortality was observed because of the sepsis due to anastomotic leakage in 3of 6 patients and cardiopulmonary disease in the other 3 of 6 patients. Necessity of intensive care unit and rates of early postoperative mortality in emergent curative CRC surgery group were significantly higher than the elective curative CRC surgery group. Mean hospital stay in elective group was also significantly shorter than in emergent group. (7.46± 2.2 days vs. 15.2 ± 5.8) (Table 1). AJCC stage III was more constantly seen (n = 44, 84.6%) in emergent surgery group rather than in elective surgery group 39.6% (n = 48) (P < 0.05). Pathological stages of the two groups are shown in Table 3.

Table 3. Comparison of pathological stages between groups

Stages	Emergent group n	Emergent group n,%	Elective group n	Elective group n,%	P value
I	0	0 (0)	21	21 (17.3)	
IIA	2		32		
IIB	3	8 (15.3)	13	52 (42.9)	
IIC	3		7		<0.0001
IIIA	8		27		
IIIB	14	44 (84.6%)	13	48 (39.6)	
IIIC	22		8		

Oncological outcomes

Mean follow-up period was 33.61 ± 15.37 in elective surgery group and 32.8 ± 16.1 months in emergent surgery group. Seven patients (13.4%) died at postoperative first year in emergent surgery group and sixteen (30.7%) patients died within post-operative 2 year. Currently 29 (55.76%) patients are still alive and 20 of these patients are disease free. The survival rate of the patients in emergent surgery side is lower than the elective surgery group with a 2-years overall survival of 33 versus 77%, respectively ($P < 0.001$) (Figure 1). Intercalarily, survival range of the elective surgery group was higher in all equal pathologic stages ($P < 0.05$) (Figure 2). "Intercalarily"

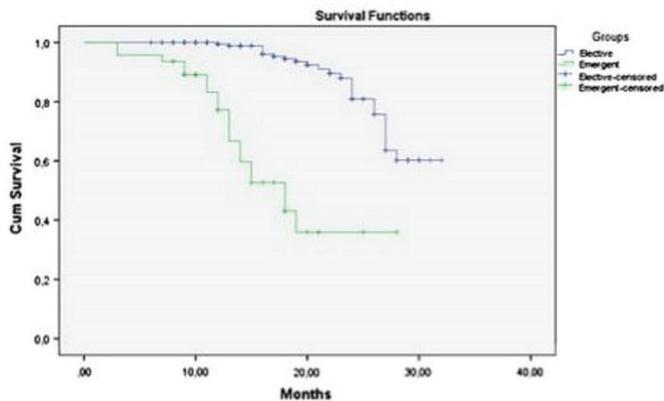


Figure 1. Estimated survival curves for two groups of patients in all stages

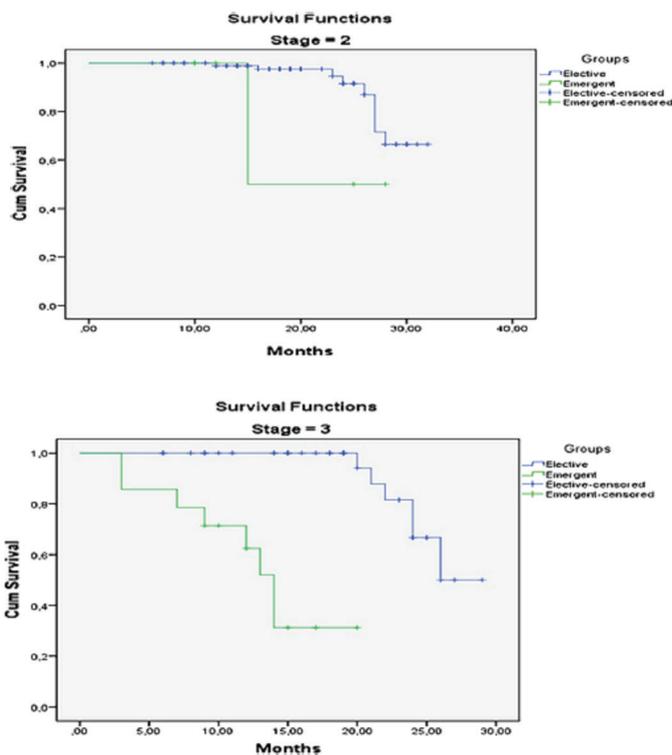


Figure 2. Estimated survival curves for two groups of patients in each stage

DISCUSSION

Although early diagnostic modalities have increase for CRC, patients with CRC are still admitting to the emergency clinic with urgent malignancy related symptoms (8). Also emergency admission are increases due to patient or health system related delay (9). Emergency surgery patients mostly have more complicated and advanced disease so higher complication rates, and longer hospital stay is seen in this group (10,11,12,13,14). In our study, emergency CRC surgery patients had longer operation time, higher blood loss; higher complication rates and longer average hospital stay than elective CRC surgery patients.

The most common complication of the emergency CRC surgery is the bowel obstruction followed by bleeding and perforation (15,16). In our study, 96.2% had bowel obstruction and only 2% of them had intestinal bleeding.

Sigmoid colon or recto-sigmoid junction was the most common place of the tumor (57.6%) and rate of cecum, ascending colon and transverse colon tumors were 32.9% in our study. In a previous study of 263 emergency CRC surgery patients, right- sided colonic cancers was seen in 37.3% of them (17). These results are nearly similar with our study.

Emergency CRC surgery is a clinical challenges (18,19) that associated with advanced stage and high morbidity and mortality (20,21,22) and a high postoperative complications rate (10,23). Our study revealed that emergency CRC surgery is more worse outcomes than elective CRC surgery group in all stages.

In a systematic review, patients with acute obstructive left- sided colon cancer, revealed that a diverting temporary colostomy is a safe method and bridge therapy to the curative surgery (24). In our study, emergency CRC patients had higher ostomy rate than elective CRC patients. Recent studies examined post- operative mortality are worse in emergency CRC surgery group than elective CRC surgery one (25,26). Our early postoperative mortality rate (11.5%) is comparable with previous studies mortality ranging from 5.7 to 15.3% (25,27,28,29).

In previous studies oncological outcomes and long- term survival for colorectal cancers in emergency group are poorer than the elective group. Also 5-year disease free survival was found significantly lower in emergent group than elective group ($P < 0.001$) (25, 30). In our study 2-year disease free survival is also similar with these previous reports.

There are some limitations of this study which have to be demonstrated. Firstly, it was a small retrospective cohort study. Additionally, the postoperative follow up time was fairly short. There is also heterogeneity in patients group (colon and rectum cancer) in this study.

CONCLUSION

In conclusion, our findings reveal that emergency CRC

surgery predicts more advanced disease and longer operation time. Also in emergent group have a higher complication rates, longer hospital stay, increased early postoperative morbidity, and lower long term survival in even all same stages.

Competing interests: The authors declare that they have no competing interest.

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