Annals of Clinical and Analytical Medicine
Original Research

Retrospective evaluation of hemicolectomies in obstructive colon tumors: A single center experience

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Abstract
Aim: The most common complications of colon cancer requiring emergency surgery are perforation and obstruction; 15-40% of patients with colon cancer initially show these conditions. The aim of this study is to evaluate clinical findings and perioperative outcomes of colon cancer patients who were emergently operated for obstruction in our center.
Material and Methods: After obtaining local ethical committee's approval, a retrospective study was designed. Patients who underwent emergent surgery for obstructive colon cancer in our clinic were evaluated between February 2009 and February 2020.
Results: A total of 79 patients were included in the study. Forty (50.63%) of these patients, were male, 39 (49.37%) were female, and the mean age was 54.55 ±17.95 years (min-max: 17-87 years). In the postoperative period, according to the Clavien-Dindo classification, 12 (15.18%) complications were grade 1-2 and 9 (11.39%) were grade 3 and above. Postoperative wound infection was observed in 10 patients. Anastomotic leak was detected in only 2 patients. Totally 5 patients (6.32%) died during the first 30 days. The cause of mortality was sepsis in the early postoperative period in two patients, massive pulmonary embolism in two patients and myocardial infarction in one patient.
Discussion: Obstructive colon cancers requiring emergency surgery constitute a more challenging group than the elective surgery patient group. Our study showed that good results can be achieved in this group in terms of postoperative complications and early mortality.
Single-stage resection and anastomosis surgery can be safely preferred instead of the Hartman procedure in the selected patient group with left colon tumors.

Keywords
Hemicolectomy, Obstructive Colon Tumors, Early Mortality, Results

DOI: 10.4328/ACAM.21205 Received: 2022-04-23 Accepted: 2022-06-21 Published Online: 2022-06-22
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Introduction

The most common complications of colon cancer requiring emergency surgery are perforation and obstruction; 15-40% of patients with colon cancer initially show these conditions [1].

The rate of obstructive colon tumors requiring surgery has been reported to be 15-30% [2]. The mortality rate in patients of this group is 10%. In the elderly population, this rate was 22 % [3].

In the literature, it is seen that it is associated with higher complication rates and poor survival rates in patients who underwent emergency surgery compared to elective surgery. It is not clear whether the short survival is due to inadequate surgery or the advanced stage of the tumor [4,5]

The aim of this study is to evaluate clinical findings and perioperative outcomes of colon cancer patients who were emergently operated for obstruction in our center.

Material and Methods

After obtaining ethical approval, a retrospective study was designed. Patients who underwent emergent surgery for obstructive colon cancer in our clinic were evaluated between February 2009 and February 2020. Informed consent was taken from all patients. The study was approved by the Ethics Committee of the Medical Faculty of ... University (Date: 06/09/2021; Decision No: HHRU/21.15.38).

Inclusion criteria: Patients over 18 years of age underwent emergency surgery for an obstructed colon tumor.

Exclusion criteria: Emergency cases, colon surgery performed for benign reasons, colon surgery due to other cancer involvements, rectal cancer patients, patients with missing data and metastatic colon cancer patients.

Demographic, clinical findings and perioperative outcomes of the patients were evaluated.

The time of drain removal, peroperative amount of blood loss, postoperative hospital stay, tumor localization, stage of tumor, lymph node status, complication in postoperative period, state of the early mortality, and cause of early mortality were retrospectively collected and evaluated.

Statistical Analysis

Data were analyzed with SPSS 21.0 for Windows (SPSS, IBM). Quantitative data were presented as mean±standard deviation (SD) and qualitative data were presented as number and percentage.

Results

A total of 79 patients were included in the study. Forty (50.63%) of the patients who underwent emergent hemicolectomy for obstructed colon tumor were male, 39 (49.37%) were female, and the mean age was 54.55 ±17.95 years (min-max: 17-87 years). Demographic and clinical findings of the patients are summarized in Table 1. The most common comorbid disease was hypertension (50.63%) and the second was diabetes mellitus with 34.4%. The mean operative time was 140 ± 90 (min-max: 50-240) minutes. At least one drain was placed in the abdomen in all patients.

The drains were removed in an average of 6.4 (5-8) days postoperatively. The blood loss during the operation was 250 ± 150 ml. The mean postoperative hospital stay was 8.17 ± 6.71 days.

Table 1. Demographic and clinical characteristics of the patients

Parameters	Emergent surgery group (n=79)
Mean age ± SD years (min-max)	54.55 ±17.95 (17-87)
Gender (mean, %)	
Male	40 (50.63%)
Female	39 (47.37%)
ASA class III-IV (%)	40 (50.63%)
Mean perop blood loss (ml)	373.8 ± 498.8
Mean operation time (minute)	140 ± 90
Ostomy (%)	22 (42.3)
ICU (%)	45 (56.96%)
Early mortality (%)	5 (6.32%)
Hospital stay ± SD days	8.17 ± 6.71

ICU: intensive care unit

Table 2. Frequency of tumor by location in the colon

Localization	Emergent group n, (%)
Cecum or ascending colon	35 (44.31%)
Transverse colon	8 (10.12%)
Descending colon	16 (20.25%)
Sigmoid	20 (25.32%)

Caecum and ascending colon were the most common tumor localizations in 35 (44.30%), patients, the second localization was sigmoid colon in 20 (25.31%) patients (Table 2). The tumor type was reported as adenocarcinoma in all cases. T3 or T4 stage cancers were seen in 74 (93.67%) patients, 12 or more lymph nodes were extracted in the specimen in 63 (79.74%) patients, and pN2 was present in 22 (27.84%) patients. Protective ileostomy or colostomy was performed in 34 (43.03%) patients. In the postoperative period, according to the Clavien-Dindo classification 12 (15.18%) complications were grade 1-2 and 9 (11.39%) were grade 3 and above. Postoperative wound infection was observed in 10 patients. All wound infections healed with drainage, dressing of the wound and antibiotics. Anastomotic leak was detected in only 2 patients. The patients were re-operated and a permanent colostomy was performed for these patients on the fifth postoperative fifth day. Totally 5 patients (6.32%) died during the first 30 days. The cause of mortality was sepsis in the early postoperative period in two patients, massive pulmonary embolism in two patients and myocardial infarction in one patient.

Discussion

Complicated colon cancer surgery has poor outcomes than elective colon tumor surgery. The two main factors for this entity are occlusion and perforation of the colon. In the literature, bowel obstruction in the tumor area is associated with poor survival [6-8]. In our study, both morbidity and early mortality rates were found to be high in patients who underwent emergency surgery for obstructed colon cancer. The advanced stage of the tumor in patients with obstruction of the colon has a great effect on this poor prognosis.

Previous literature has revealed that obstructed colon cancer is

associated with an increased incidence of distant metastases disease; on the contrary, metastatic disease was detected in only 1 patient in our study [9,10]. Patient characteristics, subsequent patient and physician delays, tumor biology, and patient immune factors may influence our results to differ from other studies.

The type of surgery to be performed as an emergency surgery for colon cancer may differ depending on patient-related factors, tumor location, tumor-related findings in the operation, and surgical experience [11]. In this study, the reason why almost all of the cases were operated using the open method was the poor medical condition, especially the high ASA values, the surgical equipment facilities of the hospital, and the co-morbidities in the elderly group.

In tumors located on the right side of the colon, causing obstruction, primary anastomosis or end ileostomy (41.4% (n=78)) surgery was preferred after right hemicolectomy. The incidence of leaks detected in cases with anastomosis after resection is 2.53% (n=2), which is consistent with the literature [12]. Obstruction is the most common complication in colon tumors originating from the left colon. In our study, unlike the literature, obstructive tumors were also observed numerically more in the right colon [13].

Hartmann end colostomy procedure, which is used in emergency surgery instead of anastomosis, completely eliminates the risk of anastomotic leakage. It is applied in left-sided colon tumors, especially in tumors that are obstructive and caused advanced dilatation in the proximal colon segments. However, current literature suggested that one-stage resection and anastomosis, which will be performed in accordance with oncological principles, can be safely applied even in complicated cases [14]. In our study, one-stage resection and anastomosis were preferred instead of the Hartman procedure in the selected patient group with left colon tumor, and anastomotic leakage was not observed in any patient.

Limitations of our study; Since it is a retrospective study and a single-center experience, the number of cases is low.

Conclusion

Obstructive colon cancers requiring emergency surgery constitute a more challenging group than the elective surgery patient group. Our study showed that good results can be achieved in this group in terms of postoperative complications and early mortality.

Single-stage resection and anastomosis surgery can be safely preferred instead of the Hartman procedure in the selected patient group for left colon tumors.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Funding: *None*

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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How to cite this article:

Metin Yalcin, Serdar Oter. *Retrospective evaluation of hemicolectomies in obstructive colon tumors: A single center experience. Ann Clin Anal Med 2022; DOI: 10.4328/ACAM.21205*