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Short-term outcomes of subtotal colectomy for splenic flexure tumors: A single-center experience

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Abstract

Splenic flexure tumors are a subtype of colon tumors whose treatment is still debated. We aim to evaluate the surgical methods and short-term outcomes of splenic flexure tumors. Fourteen patients with colonic tumors at or near the splenic flexure who underwent subtotal colectomy in the surgical oncology department of Samsun Training and Research Hospital between August 2017 and March 2020 were retrospectively evaluated in terms of postoperative morbidity, mortality, and early oncologic outcomes. Of the fourteen patients evaluated, twelve were urgent and two were elective. Four patients underwent additional organ resection as a curative surgery. The pathology was colonic adenocarcinoma in all patients, and the histotype was mucinous in five patients (35.7%). Lymph node positivity was detected in six patients (42.8%) and metastasis in one patient (7.1%). Postoperatively, two patients (14.2%) developed surgical site infection, and one patient (7.1%) died. Eight (57.1%) patients complained of more frequent defecation, with a mean bowel movement frequency of 3 ± 1.6 times daily. Based on our clinical experience, subtotal colectomy is appropriate for emergency surgical treatment of splenic flexure tumors, whereas left hemicolectomy is appropriate under elective conditions.

Keywords: Subtotal colectomy, splenic flexura tumors

Introduction

Colorectal cancer is the third most common cause of cancer-related death in both males and females [1]. When classified relative to the splenic flexure, 53% of the cases were distal and 47% were proximal to the splenic flexure. Approximately 5.7% of cases occur in the transverse colon, 7.6% in the descending colon, and 4.8% in the splenic flexure [2]. There is an ongoing controversy regarding the surgical treatment of cancers in this area, especially tumors of the splenic flexure. There are few studies on the short- and long-term outcomes of tumors in this region [3,4].

When a splenic flexure tumor is detected in a patient presenting to the emergency department with a clinical picture consistent with ileus, a subtotal colectomy is frequently recommended. Another recommended procedure is a left hemicolectomy [5,6]. Under elective conditions, the recommended technique is left hemicolectomy [4]. However, this strategy has not yet been confirmed in terms of long-term survival outcomes [7,8].

The aim of the present study was to evaluate the outcomes of subtotal colectomy due to tumors of the splenic flexure and adjacent colon segments within approximately 20 cm of the flexure.

CITATION

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Material and Methods

The data of fourteen patients with colonic tumors of the splenic flexure or within approximately 20 cm proximal or distal to the splenic flexure who underwent subtotal colectomy in the surgical oncology department of Samsun Training and Research Hospital between August 2017 and March 2020 were evaluated retrospectively. Patient demographic characteristics, American Society of Anesthesiologists (ASA) physical status scores, postoperative complications, and oncologic outcomes were analyzed. Complications that occurred during surgery were evaluated as perioperative complications, and postoperative complications were classified as early (within 1 month of surgery) or late (more than 1 month after surgery). Postoperative morbidities were grouped according to the Dindo-Clavien [9] classification.

In the subtotal colectomy operation, the ascending colon, transverse colon, descending colon, and sigmoid colon to the rectosigmoid junction and the ileocecal, right colic, middle colic, and inferior mesenteric arteries and veins were ligated and resected. Ileorectal anastomosis was created using a circular stapler.

The specimen, tumor size, and lymph node involvement were classified according to the AJCC on Cancer classification system. Based on the oncological criteria, the patients were evaluated postoperatively by the medical oncology department. Survival data were updated by phone contact with patients or their relatives.

Approval for the study was obtained from the Samsun Research and Training Hospital Ethics Committee (No: 90-2019BADK:18-133).

Descriptive statistics were used in the study. SPSS version 22.0 was used for this purpose.

Results

Patient characteristics are listed in detail (Table 1). Nine (90%) patients were men, and five (10%) were women. The mean age was 68.1±13.2 years and the mean BMI was 26.5±1.7. Six patients were ASA 2 and eight were ASA 3.

Table 1. Patient characteristics

Sex	
Male	9
Female	5
Mean age, years (±SD)	68.1±13.2
Mean BMI (±SD)	26.5±1.7
ASA score	
I	6
II	6
III	8
BMI: body mass index, ASA: American Society of anesthesiologists physical status classification	

Tumor locations and surgical characteristics of the patients are shown in detail (Table 2). Operations were urgent in twelve patients and elective in two patients. Tumor location was at the splenic flexure in three patients, on the descending colon side of the flexure in eight patients, and on the transverse colon side in three patients. All the patients underwent subtotal colectomy with ileorectal anastomosis. Four patients underwent additional organ resection: distal pancreatectomy and splenectomy in two patients, splenectomy in one patient, and subtotal gastrectomy in one patient. One patient who underwent emergency surgery had a 5-cm synchronous liver metastasis. The decision to perform surgery was made at a later date, and no procedure was performed on the liver. In all patients, an end-to-side anastomosis was made using circular staplers. The mean operative time was 149.6±40.6 minutes and mean blood loss was 175.7±90.3 mL. Severe colonic dilation (cecum >10 cm, transverse colon >8 cm, descending colon >6 cm) was present in all 12 patients who underwent emergency surgery, but not in those 2 patients whose procedures were performed electively. No stoma was created in any of the patients. Drains were placed in all patients.

Table 2. Tumor locations and surgical characteristics of the patients

Tumor position relative to the splenic flexure	
Distal transverse colon	3
At the splenic flexure	3
Proximal descending colon	8
Total abdominal colectomy, ileorectal anastomosis	14
Emergency surgery	12
Elective surgery	2
Additional organ resection	3
Distal pancreatectomy	2
Subtotal gastrectomy	1
Splenectomy	1
Mean operative time, minutes (±SD)	149.6±40.6
Mean blood loss, mL (±SD)	175.7±90.3
SD: standard deviation	

Pathologic evaluation of all patients are listed in detail (Table 3). The pathology was colonic adenocarcinoma in all patients, five of whom were mucinous. Tumor stage was T2 in two patients, T3 in five patients, T4a in five patients, and T4b in two patients. The mean number of lymph nodes removed was 41.4±10.2. Six patients showed lymph node positivity, with a mean of 7±4.5 positive nodes. Sufficient surgical margins were obtained in all patients. Synchronous lesions were detected in four patients (28.5%): low-grade appendiceal mucinous neoplasm in one patient, villous adenoma in one patient, serrated adenoma in one patient, and tubular adenoma in one patient.

Postoperative outcomes of the patients are shown in detail (Table 4). The mean hospital length of stay was 10.2±6.6 days. Postoperatively, eight patients had diarrhea in the first month and

were prescribed motility inhibitor therapy. The mean frequency of excretion was 3 (2-6) times daily. In the early postoperative period, two patients developed surgical site infection and one patient was intubated due to acute respiratory distress syndrome. The latter patient died within the second postoperative month. Eight patients underwent adjuvant chemotherapy. One patient underwent liver metastasectomy four months postoperatively. The mean follow-up time was 12 months (3-33 months), during which no recurrence or metastasis was detected in the other 11 patients.

Table 3. Pathologic evaluation

T1	0 (0%)
T2	1 (7.14%)
T3	6 (42.8%)
T4a	5 (35.7%)
T4b	2 (14.2%)
Lymph nodes removed, mean±SD	41.4±10.2
Positive lymph nodes, mean±SD	7±4.5
Distant metastasis	1 (7.14%)
Stage 1	2 (14.2%)
Stage 2	6 (42.8%)
Stage 3	5 (28.5%)
Stage 4	1 (7.14%)
Positive surgical margin	0 (0%)
Synchronous lesion	4 (28.5%)
LAMN	1
Villous adenoma	1
Tubular Adenoma	1
Serrated adenoma	1

SD: standard deviation, LAMN: low-grade appendiceal mucinous neoplasm

Table 4. Mortality, morbidity, and hospital length of stay

Mortality	1 (7.14%)
Surgical site infection	2 (14.3%)
Increased bowel movement frequency	8 (57.2%)
Mean hospital length of stay, days (±SD)	10.2±6.6

SD: standard deviation

Discussion

Due to the location of the splenic flexure of the colon between the right and left vessels and lymphatic regions, there is ongoing controversy regarding the ideal choice of resection and the extent of lymph node dissection for tumors located in this area. The lymphatic flow in this region is mainly toward the area of the inferior mesenteric artery, and extended resection, including the left branch of the middle colic artery, is believed to be sufficient in terms of oncologic outcomes. However, some reports have shown that the middle colic and left colic arteries are not present in 22% and 6% of patients, respectively [10,11] and lymphatic

spread to the ileocecal region in splenic flexure tumors supports the decision to perform subtotal colectomy for tumors in this region [4,12].

Subtotal colectomy is recommended as a prophylactic procedure to treat synchronous colon tumors and accompanying pathologies, or to prevent the development of metachronous neoplastic lesions [13,14]. Moreover, tumors in this region can develop silently until they appear with 10%-55% obstruction. This rate is higher than those in other regions of the colon [4,15]. Subtotal colectomy is reported to be necessary in such cases to prevent complications due to anastomosis in edematous tissues that do not undergo colon cleansing [5]. The prevalence of the mucinous histotype was also higher in tumors in this region. Both of these factors adversely affect survival [3,16]. In our study, 12 patients who underwent emergency surgery due to clinical presentation of intestinal obstruction had severe colonic dilation and no colonoscopic assessment. When the specimens were analyzed, seven patients had T4 disease, and one patient (7.1%) had an accompanying low-grade appendiceal mucinous neoplasm. In three patients, precancerous polypoid lesions were detected at different locations. Five patients (35.7%) had mucinous tumors.

The most common treatment method for obstruction is subtotal colectomy. Left hemicolectomy is the preferred [4]. However, in terms of oncological outcomes, some groups have also recommended subtotal colectomy for elective surgery [5,17]. Nevertheless, subtotal colectomy is associated with more postoperative complications and lower quality of life [4,18]. However, most studies on subtotal colectomy have included urgent cases. Of the studies that compared subtotal colectomy and left hemicolectomy in terms of postoperative complications, Kim et al. [4] reported higher morbidity rates with subtotal colectomy, while Gravante et al. [19] found no significant difference. In a study that compared elective cases [8], postoperative ileus was more common in subtotal colectomy. Although the number of lymph nodes removed was higher, there were no significant differences in the number of pathological lymph nodes or oncological outcomes. However, that study did not evaluate the colon function or quality of life. In another study [5], it was recommended that anastomosis be performed using the sigmoid colon if preserving the vascularity of the rectosigmoid region was oncologically feasible, that is, if intraoperative findings permitted preservation of a certain length of the sigmoid colon. This has been reported to improve colon function and the quality of life. A major complaint of our patients was the frequency of bowel movements during the postoperative period. This has an adverse effect on quality of life. As no difference in oncologic outcomes has been observed in studies comparing left hemicolectomy [4,5,8,16], we believe that choosing left hemicolectomy for elective surgeries will be more appropriate because of the negative impact of subtotal colectomy on patient comfort and quality of life. Comparative prospective studies on this subject and long-term quality of life data are required.

Conclusion

In light of our results, we believe that subtotal colectomy is preferable for the urgent surgical treatment of splenic flexure tumors and that left hemicolectomy should be the procedure of choice for elective surgery.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical Approval

Approval for the study was obtained from the Samsun Research and Training Hospital Ethics Committee (No: 90-2019BADK:18-133).

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