ORIGINAL ARTICLE

Are the single-step resection and primary anastomosis suitable for obstructıve colorectal patients in older cases?

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ABSTRACT

Aim To investigate the efficacy and safety of the single-step surgery in elderly patients with obstructive colorectal cancer.

Methods All patients who underwent single-step surgery and primary anastomosis for obstructive colorectal cancer in the period between January 2012 December 2017 were evaluated in this study. The patients were divided into two groups: younger than 65 (Group Young) and older than 65 (Group Old). Demographic data, American Society of Anesthesiologists scores (ASA) scores, comorbidities, preoperative albumin levels, type of surgery, postoperative morbidity and mortality, pathological stages, and overall survival rates were investigated.

Results A total of 89 patients were included: 49 (54%) were older than 65 (Group Old). In Group Old, the mean age was 75 (65-97), of which 28 (58.3%) were males. There were 41 patients younger than 65 (Group Young) with the mean age of 52.6 (41-64 years of age), of which 21 (51.2%) were males. There was no difference between groups according to albumin level. There was no statistical difference between two groups according to tumour localization, pathological stage and type of surgery, as well as according to surgical complications. The median overall survival rate was 11 months in both groups (0-66) (p=0.320).

Conclusion Meticulous preparation of older patients (correction of anaemia, electrolyte levels and pH) paves the road for successful surgeries, including single-step resection and primary anastomosis.

Key words: anastomosis, colorectal surgery, surgical

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INTRODUCTION

Majority of patients suffering from colorectal cancer were diagnosed in advanced ages and about 30% of these cases were admitted with mechanical obstruction. Unfortunately, there is limited data in the literature about feasibility of single step surgery with primary anastomosis in elderly patients with obstructive colorectal cancer (CRC) (1,2). Obstructive tumours are usually presented in more advanced stages. Sepsis, dehydration, hemodynamic instability and malnutrition remain major obstacles for successful surgical management of these patients (3). Although, recent advances in technology such as colonic stents and laser applications give us the opportunity to create gastrointestinal system continuity, a significant number of the patients are not suitable for these conservative approaches (3,4).

In right sided colonic malignancies with obstruction general surgical approach is usually single-step resection and anastomosis, however, there is no consensus for left sided tumours (5). In practice, there are four current surgical approaches for the patients with left sided obstructive tumour: loop colostomy/ ileostomy without resection (2/3 step approach), primary resection and Hartman procedure , resection with primary anastomosis (single step surgery), and in selected cases and centres conservative approaches (stent or laser) for palliation (bridge to surgery) (5). Most surgeons did not prefer single-step surgery because of an increasing risk of anastomosis leak secondary to co-morbidities and malnutrition, especially in elderly patients (1). According to the literature, Hartmann procedure is still the most performed surgical procedure in elderly patients with obstructive left sided colorectal cancer (1). Unfortunately, in majority of these patients, colostomies cannot be closed, therefore they have to live with permanent stomas, and in such cases the quality of life is generally measured very low (1). However, some researchers reported very successful outcomes even in elderly patients, who underwent single-step surgery (6).

Aim of this present study was to investigate the efficacy and safety of the single-step surgery in elderly patients with obstructive colorectal cancer.

PATIENTS AND METHOD

Patients and study design

All patients who underwent single step surgery and primary anastomosis for obstructive colorectal cancer in the Department of General Surgery of Kartal Research and Education Hospital, Istanbul, Turkey between January 2012 and December 2017 were retrospectively evaluated. The exclusion criteria were patients with mental disability and patients with another malignancy. The patients were divided into two groups according to the age: younger than 65 (Group Young) and patients ≥65 (Group Old). Demographic data, the American Society of Anesthesiologists scores (ASA) score, comorbidities, preoperative albumin level, type of surgery, postoperative morbidity and mortality, pathological stage, and overall survival rate were investigated. Postoperative mortality was defined as deaths within a period of one month following surgeries.

The study was approved by the Kartal Research and Education Hospital's Ethics Committee.

Methods

In our clinic, all patients received nasogastric tubes for decompression and foley catheters for urinary status. Personalized fluid resuscitation was applied with careful attention. Central venous catheter was placed and central venous pressure was measured. Plain abdominal graphies, whole abdominal CT scan and colonoscopy were utilized for diagnosis. For colonoscopy examination, fleet enemas was used. Manual decompression was applied for intestinal decompression before single-step resection and primary anastomosis. All patients received single dose 1 gr ceftriaxon and 500 metronidazol, preoperatively, and antibiotics treatment continued for a week.

The American Society of Anesthesiologists scores (7) were evaluated by members of our anaesthesia team. It is a physical status classification system calculated prior to surgery: ASA I - a normal healthy patient; ASA II - a patient with mild systemic disease; ASA III- a patient with severe systemic disease; ASA IV - a patient with severe systemic disease that is a constant threat to life; ASA V- a moribund patient who is not expected to survive without the operation; ASA VI - declared brain-death patient whose organs are being removed for donor purposes.

Statistical analysis

Data were collected using paper/pencil instruments by the surgeon and entered into a computer by statistical staff. Parameters were evaluated for predictive significance by independent t-tests for continuous variables $\chi 2$ test for categorical variables. A difference was considered as statistically significant with $p<0.05$.

RESULTS

A total of 89 patients were included in this study, of which 49 (54%) were older than 65 (Group Old). In the Group Old, the mean age was 75 (range 65-97) years, of which 28 (58.3%) were males. There were 41 (46%) patients younger than 65 years (Group Young) with the mean age of 52.6 (range 41-64); 21 (51.2%) were males. There was no difference in either groups according to gender (p=0.501). The patients in Group Old had significantly higher ASA score (p=0.004) than those in Group Young. Also, comorbidities were significantly higher in Group Old (p=0.337). Most frequent additional disease was hypertension in both groups (p=0.337). In five (12.2%) patients in the Group Old albumin level lower than 3 g/dL was found and 12 (25%) in the Group Young (p= 0.220) (Table 1).

Table 1. Patient characteristics according to age groups

Characteristic	No (%) of patients in the group		p
	<65 years (n=41)	≥ 65 years (n=48)	
Gender			0.501
Female	20 (48.8)	20 (41.7)	
Male	21 (51.2)	28 (58.3)	
Serum albumin level (g/dL)			0.220
3>	5 (12.2)	12 (25.0)	
3 ≤ ~ < 3.5	21 (51.2)	22 (45.8)	
3.5 ≤ ~ < 4.0	13 (31.7)	14 (29.2)	
4.0 ≤	2 (4,9)	0	
Additional diseases			0.337
Hypertension	10 (24.4)	22 (45.8)	
Diabetes	8 (19.5)	12 (25.0)	
Heart failure	0	6 (12.5)	
Asthma	0	4 (8.3)	
KOAH	0	4 (8.3)	
CLD	1 (2.4)	1 (2.1)	
CRF	1 (2.4)	2 (4.2)	
ASA score			0.004
II	13 (31.7)	5 (10.4)	
III	27 (65.9)	33 (68.8)	
IV	1 (2.4)	10 (20.8)	

KOAH, chronic obstructive pulmonary disease; CLD, chronic liver disease; CRF, chronic renal failure; ASA, American Society of Anesthesiologist

There was no statistical difference between two groups relating to tumour localization, pathological stage and type of surgery (p>0.05 for all comparisons) (Table 2).

Table 2. Tumour localization, stage and type of surgery

Characteristic	No (%) of the patients in the group		P
	<65 (n=41)	≥ 65 (n=48)	
Localization			
Right colon	19 (46.3)	17 (35.4)	
Left colon	22 (53.7)	31 (64.6)	
Stage			
II	12 (29.3)	21 (43.8)	
III	14 (34.1)	16 (33.3)	
IV	15 (36.6)	11 (22.9)	
Type of surgery			
Right colectomy	22 (53.7)	22 (45.8)	
Left colectomy	2 (4.9)	8 (16.7)	
Anterior resection	17 (41.5)	14 (29.2)	
Segmental resection	0	1 (2.1)	
Subtotal colectomy	0	3 (6.3)	

The most frequent postoperative complication was surgical site infection in both groups (26.8% v. 27.1%; p=0.979). A rate of anastomosis leaks was 7.3% in the Group Old and 8.3% in the Group Young (p=0.859) (p=0.689, 0.653). Respiratory and renal failures were most detected systemic complications in both groups, 12.2% v. 18.8%, respectively (Table 3).

Table 3. Surgical and systematic postoperative morbidity

Type of morbidity	No (%) of the patients in the group		p
	<65 (n=41)	≥ 65 (n=48)	
Local			
Surgical site infection	11 (26.8)	13 (27.1)	0.979
Anastomosis leak	3 (7.3)	4 (8.3)	0.859
Intra-abdominal bleeding	0	1 (2.1)	0.353
Intra-abdominal infection	2 (4.9)	1 (2.1)	0.467
Elongated ileus	6 (14.6)	7 (14.6)	0.995
Evisceration	2 (4.9)	3 (6.3)	0.483
Systematic			
Respiratory			
Respiratory failure	5 (12.2)	9 (18.8)	0.397
Pulmonary emboli	0	1 (2.1)	-
Pneumonia	0	1 (2.1)	-
Cardiac			
Myocardial infarction	1 (2.4)	0	-
Renal			
Acute renal failure	5 (12.2)	9 (18.8)	0.910
Deep venous thrombosis	1 (2.4)	0	-

ASA, American Society of Anesthesiologist

The rate of postoperative early mortality was 2.3 % (n=1) in the Group Young and 8.3% (n=4) in the Group Old (p=0.229). The median overall survival rate was 11 months in both groups (range 0-66) with no statistical significance (p=0.320) (Table 4.).

Table 4. Characteristics of mortality cases

	<65 (n=41)	≥ 65 (n=48)	p
Gender			0.300
Female	1	2	
Male	0	2	
Stage			0.620
II	0	1	
III	0	1	
IV	1	2	
ASA score			0.371
I-II	0	0	
III	1	2	
IV	0	2	
Total	1	4	0.229

DISCUSSION

Usually, majority of colorectal patients admitted with the obstruction are in advanced ages with comorbidities (8). Currently, the majority of literature reviews urgent colorectal cancer patients with comorbidities who received stomas (9-11). If appropriate preoperative preparations are performed, single-step resection and primary anastomosis can be safely applied with low mortality and morbidity rates in even elderly patients (12).

Patients admitted for obstructive colorectal cancer require preoperative intestinal decompression for successful resection and anastomosis. Manual decompression and irrigation of colon (on-table lavage) can be safely applied. Studies comparing both methods conclude that manual decompression is simple and can be done within a short period of time. There is no difference between both methods (13,14). We applied manual decompression to all patients. To define synchronous tumours via colonoscopic examinations is highly difficult, manual decompression may be helpful to overcome this situation.

We faced systemic complications more than local in cases with high ASA scores. The same reports can be found in the literature (15). In our study preoperative statistical difference between both groups according to ASA score was not detected following surgeries, in relation with local and systemic complications. Age should not be a contraindication for resection and anastomosis.

Iversen et al. reported mortality as 22% in obstructive colorectal cancer cases (16). According to the literature postoperative mortality is related to comorbidities and ASA score more than age (17-20). In our study short time results were excellent for resection and anastomosis. Total mortality rate was 5.6%.

Application of Hartmann procedure due to high risk of anastomosis leak carry risk of permanent stomas with low quality of life (1). There is no randomized study comparing resection and Hartman procedure. There is no difference between two surgeries according to mortality and morbidity (5). Advances in surgical techniques and preoperative supportive therapies give us the opportunity for successful operations. Primary resection and anastomosis can be safely applied. In our study, mortality rates and the number of anastomosis leaks were significantly lower than in other studies in the literature review (12,21). We believe in experienced hands, dedicated to colorectal surgery, who should do these type of surgeries. In specialized units for colorectal surgery like those in our, institution resection and anastomosis should be the choice of treatment.

Single step-resection and anastomosis have excellent results within a short period of time. However, reports on long-term results indicate high numbers of mortality in older cases (22-24). We believe that shortage of long-term survival is related to high numbers of Stage 3 and 4 patients.

In conclusion, meticulous preparation of older patients (correction of anaemia, electrolyte levels and pH) paves the road for successful surgeries, including single-step resection and primary anastomosis. This type of surgery can be safely applied with low mortality and morbidity rates. Older patients will not receive permanent stomas. Age should not play a major role in planning type of surgery. Curative resections should be done by experienced surgeons without hesitation. Despite the absence of screening and chemotherapy regimens in older patients, they should receive effective surgical procedures.

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TRANSPARENCY DECLARATION

Conflicts of interest: None to declare.

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