

CLINICAL STUDY

Subtotal colectomy in the treatment of acute malignant left-sided large bowel obstruction

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Abstract: *Background:* The goal of this study is to evaluate our long-term experience with the decision of optimal urgent surgical treatment.

Methods: This study is a retrospective analysis and comparison of patients with acute left-sided malignant bowel obstruction and results after staged or single-stage operations. All hospital records of patients undergoing stage or one-stage surgical procedures in the 1a 10-year period (1998–2007) were analyzed considering the severity of illness, postoperative morbidity and mortality, reoperations, hospital stay, quality of life and long term results of surgical treatment.

Results: There were 99 men and 86 women with the median age 66 years (range 35–88 years). Subtotal colectomy (SCE) as one-stage procedure was performed in 85 (45.9 %) of patients. Two-stage procedures required re-operations in 21 % vs 3.5 % in SCE group, postoperative morbidity was 19.0 % vs 5.9 %, the average hospital stay was 21 vs 16 days.

Conclusion: Authors consider SCE for an optimal urgent surgical method for treatment of acute malignant left-sided large bowel obstruction for the next reasons: it is a one-stage procedure in decompensated bowel obstruction with generally acceptable postoperative morbidity, allowing an effective elimination of the "third space", detoxication of the patient, making it possible to eliminate definitively the malignancy with a minimal impairment of patients life comfort (*Fig. 2, Tab. 2, Ref. 12*). Full Text (Free, PDF) www.bmj.sk.

Key words: colorectal cancer, subtotal colectomy, acute bowel obstruction, left colon, surgical emergency.

According to recent review of the national cancer register in our country the incidence of the colorectal carcinoma is higher in the male, in the general population the incidence oscillates round about 25 cases in 100000 subjects. Colorectal cancer is the most common malignancy of the digestive tract, mostly affecting patients aged 40–70 years. It comes under the malignancies with high curability rate which is however limited by an early diagnosis and radical surgical treatment according to standard regarding the accustomed oncological treatment principles. Acute and urgent surgical therapy is associated with an increased risk of infectious complications and problems with the unprepared bowel. According to the literature in 15–20 % of the patients a colorectal carcinoma clinically manifests as a bowel obstruction without any warning symptoms (1), in cases where obstruction is the primary symptom, even after successful radical surgical treatment, there is significantly higher risk of metastatic dissemination, malignancy recurrence and lethality (2). The first step in the the of the diagnostic procedure diagnosis in of patients with possible tumor symptoms depends on the patient and his general practitioner, the surgeon joins the diagnostic and thera-

peutic process in the phase of the surgical treatment, which plays the dominant role of in the multimodal therapy. Postoperative follow-up and monitoring of possible recurrence consists of periodical clinical examination, tumor markers monitoring (CEA, CA19-9), endoluminal X-ray and ultrasound diagnostic, regional lymphatic nodes monitoring (ultrasound, computed tomography, magnetic resonance imaging).

Colorectal carcinoma may have an acute first presentation as surgical emergency presenting with higher morbidity and mortality and worse prognosis, than in usually electively managed patients (3). Despite the efforts to convert an emergency or urgent clinical situation into a more elective one, there are various reasons why surgical management of the acutely obstructed colon remains necessary. Insertion of a metallic stent has been shown to be of benefit (4), but the technique may not be executable. Therefore surgical procedures remain a major component in of the management of this condition. Dehydration, distended unprepared bowel, advanced disease are the factors that predispose to complications. Three-stage approach has been challenged, primary resection and anastomosis is recently considered as the surgical treatment of choice (5). For uncomplicated malignant left-sided large bowel obstruction primary resection and anastomosis is the preferred option, two-stage procedures remain acceptable management strategies, but are currently out of vogue (6).

The aim of our study was the evaluation of the real situation in diagnostic and surgical therapy of the colorectal carcinoma.

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noma and the limited potential of the urgent treatment required by a tumor with clinically present acute obstruction.

Material and methods

In our department the first emergency subtotal colectomy was performed in 1993. Our study is a retrospective analysis of patients surgically treated for acute decompensation of the left colon obstruction during the years 1998–2007. In the included cases, tumors were located between the ileal flexure and the rectosigmoid junction. The decompensation criteria were clinical state, fecal vomiting and radiological finding of caecum distension of more than 8 cm. In the study we evaluated the amount of incidence of acute obstructions among the group of patients operated for colorectal cancer and the incidence of acute abdominal symptoms combination (obstruction, perforation, bleeding) in emergency surgery, the potential of urgent surgical therapy and optimal single-stage surgery were evaluated. Subtotal colectomy (SCE) and two-stage procedures (TSP) were performed in standard surgical fashion. In TSP axial colostomy, Hartmann procedure and segmental resection with ileostomy were performed.

All the patients were subject to microbiological monitoring with directed antibiotic treatment, and in selected cases of immunodeficiency immunologic support was administered. The patients' nutrition was provided by "all in one" total parenteral nutrition system via original 2–3 channel central venous sets with low internal surface adhesivity. Combined nutrition with the addition, when possible, of oral intake or enteral nutrition provided every patient according to his current needs, with daily nitrogen intake of 16–24 g, energy intake of 6300–11300 kJ (1500–2700 kcal), fluid volumes from restriction values of 1750 ml to 3000 ml, and glucose/fat ratios from 77/23 to 50/50. The fat emulsion consisted of 10–20 % of triglycerides with medium chain fatty acids.

The data were compared for statistical differences using the ANOVA and Student t-test. $p < 0.05$ was assumed to be significant. We evaluated the 5 years survival by the cumulative statistical analysis among the group.

Results

During the follow-up period surgery for colorectal cancer was performed in 1143 patients. Acute large bowel obstruction was present in 321 patients (28.1 %). The rate of acute large bowel obstruction is shown in Figure 1.

Defined decompensated obstruction of the determined part of the large bowel as the only significant symptom requiring urgent surgical treatment was present in 185 patients, 57.6 % of the overall obstruction incidence. There were 99 men and 86 women with the median age 66 years (range 35–88 years). In 38 (20.5 %) cases the obstruction was either associated with stercoral peritonitis from bowel wall perforation or acute bleeding. That means that the majority of potentially curable tumors were located in the risky area which is the subject of discussion on

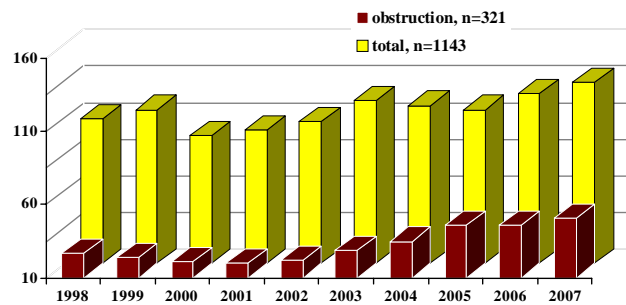


Fig. 1. Rate (28.1 %) of acute bowel obstruction in surgical treatment of colorectal cancer.

the tactic of urgent surgical therapy (single-stage/two-stage procedure) (Fig. 2).

The malignancy extent in 185 operated patients has shown intraluminal tumor localization (T1–4) only in one third (34 %) of the patients, regional lymphatic nodes were affected (N1–X) in 28 %, distant metastases of the liver were present in 21% of the patients. The described extent limited the potential of the urgent surgical procedure. Reoperations for intra-abdominal complications during the hospital stay were needed in 24 (13 %) cases, mostly in the TSP group, after perioperative lavage of the large bowel before the reconstruction of the alimentary canal, and in palliative procedures. From 85 subtotal colectomies reoperation for intra-abdominal complications was necessary only in 3 cases (3.5 %). Subtotal colectomy, considering oncological radicality and infective complications prevention, appears to be, according to our experience, the optimal method of urgent surgical treatment with the lowest risk of fecal contamination of the abdominal cavity. In long-term follow-up SCE treated patients did not require pharmacological therapy affecting the stool frequency. The results and comparison between TSP and SCE are shown in Table 1.

In histological findings tubular adenocarcinoma gr. II–IV was confirmed in 80 % cases, in 20 % there was a sigilocellular component. The results of our long-term observation, the 5 year survival of patients undergoing our management considering the capabilities of our institution are concluded in Table 2 and compared with generally accepted literature references.

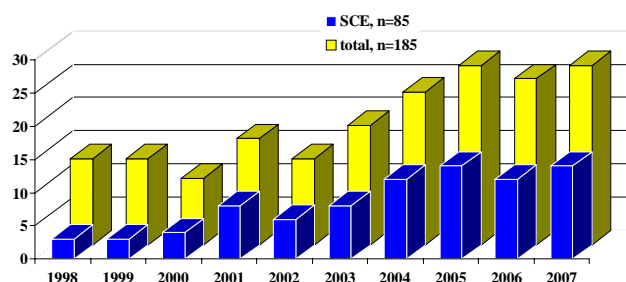


Fig. 2. Rate (45.9 %) of SCE in emergency surgery of colorectal cancer.

Tab. 1. Overview of emergency surgery.

	TSP	SCE	Statistics
Patients n (%)	100 (54.1%)	85 (45.9%)	
Re-operations n (%)	21 (21%)	3 (3.5%)	ES
Postoperative mortality*	19 (19%)	5 (5.9%)	ES
Hospital stay, days (range)	21 (8–33)	16 (7–24)	VS

TSP – two-stage procedure, SCE – subtotal colectomy, * with no relation to the primary disease, ES – extremely significant, VS – very significant

Tab. 2. Five year survival of patients undergoing urgent surgery for advanced stages of the disease (n=185).

TNM	Our study (%)	References range (%)
III (T1–4, N1)	61	30–60
IV (liver metastases)	20	20–25
IV (generalization)	3	5

Discussion

For its incidence surgical treatment of the colorectal carcinoma is among within the procedures spectrum of each surgery department. Prognosis improved prognosis of the potentially curable colorectal carcinoma depends on the early diagnosis, optimal surgical treatment, accompanying present or following subsequent multimodal therapy and consistent monitoring of the patient in the clinical follow-up. Early diagnosis is associated with public health education affecting the population in risk and a responsible attitude of the general practitioners. Large bowel obstruction is an adverse factor for the patient, because it significantly worsens the prognosis by higher postoperative infectious complications risk as well as the recurrence of the disease and unfavorable long-term survival (4). Inconsistent opinion about the method of urgent surgical treatment prevails dominated in for the left colon located tumor issue, when, as a result of the concern about the infectious complications even reputable institutions inclined to preferred the fecal derivation by a temporary axial colostomy. Naturally, this method, apart from the adverse psychological impact on the most of the patients, required another surgical intervention. In the meantime, the previously accepted benefit of the ortograde lavage for the safety of elective colorectal carcinoma surgery has been challenged (7). Perforation of the large bowel combined with obstruction remarkably worsens the prognosis of the patients by the incidence of septic complications, mortality of such patients rises up to 33 % (8). In our study we dealt with such situation in one fifth of the patients with acceptable results of the surgical therapy. Despite the opinion of perceived the safety of the two-stage Hartmann procedure, in acute conditions by due to obstruction complications of the first urgent operation occur in 51 % (9), which means that, even benevolently accepting the need of alimentary canal reconstruction in a second operation, this procedure should be accepted only in an instable patient and an advanced obstruction stage

and concomitant stercoral peritonitis. An alternative two-stage procedure is coecostomy using a thick drain in local anesthesia followed by a definitive operation after managing the ileus. The procedure is associated with mortality rate of 13 % and complications rate of 23 %, each very ninth treated patient treated requires a third surgery after the definitive second procedure to remove the coecostomy (10). In the initial therapy of a low lying obstruction an endoscopic laser treatment is available, which delays the complete obstruction by 2–4 months (11). Acute left-sided colonic obstruction is most often caused by malignancy and the surgical treatment is associated with a high mortality and morbidity rate. Moreover, these operated patients end up with a temporary or permanent stoma. Initial insertion of an enteral stent to decompress the obstructed colon, allowing for surgery to be performed electively, is gaining popularity. In uncontrolled studies stent placement before elective surgery has been suggested to decrease mortality, morbidity and number of colostomies. However, stent perforation can lead to peritoneal tumor spill, turning a potentially curable disease into an incurable one (4). In inoperable cases another method of invasive endoscopy is available, a self-expanding metallic prosthesis implantation to at the site the location of the obstruction (12). Our results, despite limited potential, are comparable to the literature references, certainly the possibility of using the endoscopic alternative in the future may improve the results of the recent management. For this reason we present also evidence-based medicine (EBM) findings and recommendations (6):

The choice of subtotal (SCE) or segmental colectomy (SC) should be decided on the following features of the case: Caecal/ ischemia perforation or serosal tear – favor SCE, synchronous lesions – favor SCE, surgeon preference if no other directing influences (Grade A); Subtotal colectomy results in increased frequency of defecation but most patients do not require long-term antidiarrheal medication (Level I); If segmental colectomy is performed the use of on table lavage is at the discretion of the surgeon, but is not essential (Grade A); Metastatic spread disease to the liver alone is not in itself a contraindication to resection and primary anastomosis (Grade GP – recommended good practice based on the clinical experience of the expert group and other professionals); If available, and in the absence of signs of perforation, peritonitis, or closed loop obstruction, the insertion of a self-expanding metallic stent should be considered (Grade B); Multi-modal optimization strategies should be employed in patients with malignant large bowel obstruction where the obstruction has been relieved preoperatively (Grade A); Several aspects of multimodal optimization can be applied to those patients requiring urgent surgery with malignant large bowel obstruction (Grade GP); Emergency surgery for acute obstruction should be performed by an experienced surgeon who is able to perform all the available procedures (Grade C).

Conclusions

Despite all advances in clinical diagnostics and surgical treatment of the colorectal carcinoma our experience shows a bitter

fact that more than in one fifth of all cases the surgeon treats the illness as an acute abdomen without any exact diagnostic and any chance of adequate preparation of the patient. A single-stage operation is optimal acute treatment, according to our experience subtotal colectomy is preferred. The five year survival is to be expected in one third of the patients.

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