

CHALLENGES IN THE SURGICAL TREATMENT OF LOCALLY RECURRENT COLORECTAL CARCINOMA

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ABSTRACT

BACKGROUND: Locally recurrent CRC is a disease presenting an exceptional challenge to the surgeon. At the time of the diagnosis local recurrences are often accompanied by complications and engage adjacent organs and anatomical structures. Local recurrences are often associated with systemic ones. Attempts to achieve surgical radicality performing multivisceral resections in the surgical field of post-operative adhesions, adjuvant RT with neoangiogenesis and dissecting changed plans is often challenging.

AIM: To assess the early perioperative results of patients with locally recurrent CRC.

MATERIALS AND METHODS: A study based on 62 patients who underwent surgery for locally recurrent CRC for a period of seven years: January 2007 – December 2013. The early perioperative results are assessed.

RESULTS: All patients in the group underwent surgery. We performed 26 palliative and 36 potentially curative surgical interventions. The average hospital stay is 9.2 days (7 - 22 days). In one case the patient died of multiple organ failure postoperatively. Perioperative mortality rate was estimated at 1.6% and perioperative morbidity was 25.8% (16 patients).

CONCLUSION: Perianastomotic recurrences without distant dissemination are the most favorable for radical surgical treatment. It is imperative that the implementation of en bloc resection without breaking the adherent to the tumor structures is important for the achievement of radicality.

Keywords: *local recurrence, colorectal, radical*

INTRODUCTION

The presence of residual tumor formation, or transmural lymphogenic metastases, after primary resection regarding CRCs is the most common cause of local recurrence. As a rule, local recurrences of

colorectal cancer are locally advanced - with macroscopic evidence of involvement of adjacent anatomical structures and organs. Usually, therapy in these patients is multimodal and requires good communication with the surgeon, the medical oncologist and the radiotherapists, as well as interdisciplinary surgical skills.

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MATERIALS AND METHODS

This publication is based on 62 patients who underwent surgery at the Clinic for a period of seven years - January 2007 - December 2013. The gender distribution is as follows: 25 men (40.3%) and 37 women (49.7%), with an average age of 61.9 years. All types of examinations - history, physical, laboratory, imaging methods were applied in the course of the treatment.

The Patients were classified according to the topic local recurrence as follows (Tabl. 1)

Table 1. Topic of local recurrence

Localization	Count
Ileotransverse anastomosis	8
Sigmoid-rectal anastomosis	28
Rectum/Rectal stump	6
Left hypochondrium	4
Colon sigmoideum	2
Right hypochondrium	4
Right retroperitoneum	4
Pelvis	4
Colon transversum	1
Anus praeter	1

Most often, local recurrences occur in patients with sigmoid colorectal and transverse colorectal anastomosis performed in the past. If we classify patients by the recurrence indicator “localization” of primary CRC, the left colon and the pelvis prevail - 45 (72.5%). This largely corresponds to the frequency of the primary colorectal cancer, which is most often localized in the rectum and the left colon. Of patients with other locations the largest group is of those with recurrence after right hemicolectomy. Other localizations are rare and have almost equal distribution. In order to define the performed surgeries as potentially curative or palliative, indications and analysis of the early perioperative results are done, using the place of the disease “recurrence” – supra- or inframesocolic abdominal cavity, and the radical nature of the intervention conducted. The term potentially curative operations denotes those in which resection/extirpation of local recurrence and/or solitary liver/peritoneal metastases without macroscopic residual tumor tissue and clean resection lines were carried out. Crucial for surgical tactics is the presence of complications caused by local recurrence and/or peritoneal spread of the disease. Basically, recurrent colorectal carcinoma is accompanied by a high rate of complications at diagnosis.

Table 2 shows the type and number of the complications.

Table 2. Complications at diagnosis

Complications	Count
Complete bowel obstruction	11
Incomplete bowel obstruction	18
Pericolic abscess	2
Recto-vaginal fistula	2
n. femoralis dexter paresis, neuralgia	1
Tumor-vesical fistula	1
Tumor-parietal fistula	1
Ileocolic fistula	1

Complications were observed preoperatively in 37 patients - 59.6% of all. Most of these patients are with clinical and instrumental data for relative or complete intestinal obstruction - 29. If we add two patients with intra-abdominal abscess data, we see that in terms of postponed or absolute urgency we have operated on 31 patients (50% of the total number). Emergencies largely define the indications for surgical treatment. In these cases, apart from affecting the specific complications (often to overcome intestinal obstruction), the surgeon is faced with the challenge to eliminate local recurrence and/or distant solitary metastases. The surgeon's decision in these cases is extremely difficult and depends on many circumstances - condition of the patient, resectability of the local recurrence, resectability of the liver metastases, experience of the surgical team. All patients in the group underwent surgery. We performed 26 palliative and 36 potentially curative surgical interventions. The term “potentially curative surgery” defines those procedures in which the locally recurrent tumor was removed, solitary peritoneal and/or liver metastases were removed, there was no macroscopic residual tumor tissue and the resection lines were “clear”.

Palliative operations are shown in Table. 3.

We should mention that the majority of palliative operations are performed in emergency conditions, mainly on the occasion of relative or complete intestinal obstruction. The reason for performing a palliative procedure is multiple peritoneal and/or bilobar liver metastases, as well as infiltration of the main vessels - the aorta, coeliac trunk, upper mesenteric vessels, IVC, which corresponds with the inability to achieve clean resection lines. An-

Table 3. Palliative operations performed

Palliative procedures	Count
Ileotransverse bypass	2
Small bowel resection	5
Explorative laparotomy	3
Ileostomy	1
Colostomy	10
Small bowel resection + colostomy	3
Hartmann resection + small bowel resection	2

other reason for performing a palliative procedure is bad performance status of the patient and high risk for multi-organ resection in emergency cases. In 36 patients resections were performed in an attempt to achieve surgical radicality. The localization of the recurrence in 13 patients was in the upper abdomen. Only one of them was found with an isolated retroperitoneal recurrence and underwent local excision. In all other cases multivisceral resection of different organs and anatomical elements including stomach, pancreas, small and large bowel, EHB, liver, diaphragm was performed. The specifics of recurrent tumors in the upper abdominal cavity require experience in HPB surgery. As an example, we can mention surgical procedures where resections of the small intestine, transversal colon, gall bladder, duodenum and part of the pancreas were performed in combination with liver metastasectomy. The percentage of patients, whose recurrence was localized in the left part of the colon and pelvis, was higher – 23 were observed. This group also stresses the fact that during the intervention the disease was locally advanced. In only 2 patients the recurrence was isolated in the colonic anastomosis, but multivisceral resections in an attempt to achieve surgical radicality were also performed in these cases. Infiltration of pelvic organs and pelvic anatomical elements is common. Most often affected are the bladder, uterus with ADNEXA, vagina, as well as an infiltration of the small bowel. Performing multivisceral resections on a recurrent CRC disease is challenging. Common findings are multiple peritoneal adhesions requiring total debridement before deciding on the type of the procedure. The exploration is often hampered by post-radiation fibrosis and accompanying neoangiogen-

esis, bleeding into the operative field and a need for accurate hemostasis. This is necessary in cases of pelvic recurrence and adjuvant and neoadjuvant conducted RT. The identification of anatomical structures away from the macroscopical borders of the tumor infiltration, in order to avoid injury during dissection in cases where the anatomical plans of dissection are changed, and the possibility of clamping vessels to avoid massive intraoperative hemorrhage, is important principle for us. We prefer two-stage operations for pelvic recurrent CRC, which is related to passage complications in recurrence or new radiation complications of adjuvant RT. The multidisciplinary approach to the planning of the surgical procedure on the occasion of pelvic recurrence is important. It is imperative to conduct urine bladder examination - cystoscopy - in order to verify the extension of the recurrence. In cases of doubts or data for infiltration of the urine tracts, ureteral stenting must be done preoperatively. Perioperative results. The average hospital stay is 9.2 days (7 - 22 days). In one case a patient died of multiple organ failure postoperatively. Perioperative mortality rate was estimated at 1.6% and perioperative morbidity was 25.8% (16 patients). The complications are shown in Table 4.

Table 4. Perioperative complications

Complications	Count
Wound infection	7
Fever, abdominal wall tumor fistula	1
Partial colorectal anastomosis insufficiency, without re-operation.	1
Vesicovaginal fistula	1
n. femoralis dexter paresis	1
Hematuria	1
Hemorrhagic stroke with right hemiparesis	1
Postoperative bowel obstruction	1
Right-sided pleural effusion required pleural drainage; Urine fistula with reoperation and reconstruction of left ureter.	1
Pneumothorax with pleural drainage	1

The most common complication is surgical wound infection, which is associated with the nature of the procedures. Clean surgical complications associated with interventions in the pelvis were partial insufficiency and urological complications. The lesion of the right femoral nerve was a result of the extirpation of a huge local recurrence in the right iliac fossa.

It is interesting that surgical complications after abdominal operations in the upper abdomen (5 pancreatic resections, 10 liver resections, 2 duodenal and 1 stomach resection) were not observed. In all 36 patients with potentially curative procedures a histological border infiltration into neighboring organs or anatomical structure was examined. Infiltration was found in 32 (88%) patients (pT4).

DISCUSSION

Locoregional recurrence in colon cancer can be categorized into four groups, primarily by way of recurrence: perianastomotic (mural) recurrence; mesenteric (by way of regional lymph nodes) recurrence; retroperitoneal (transmural, distant lymph nodes) recurrence; peritoneal recurrence (1,2,3). The most frequent recurrence in some series (1,4) is perianastomotic. This is the most common recurrence reported in our series, where the tumor itself covers the anastomosis and the peritoneal structures nearby. In all cases of a recurrent disease we are guided by the principles of oncological surgery - maximum anatomical presentation of adjacent anatomical structures, meticulous hemostasis and minimal trauma of the tumor formation. Extremely important is the performance of en bloc resection of the tumor without affecting its borders (5). Colonic recurrence formations are treated by the rules of oncological surgery - at least 5 cm clean macroscopic resection lines where possible. (6) In all cases of macroscopic involvement of parietal peritoneum we perform a wide excision not only of the peritoneum, but of the muscular aponeurotic layers of the abdominal wall as well. If it is needed we use polypropylene and other material implants (mesh) for closure of the abdominal wall. Excision of retroperitoneal recurrence in the upper level passes at a minimum of at least 3 cm from the macroscopic boundary of the tumor and is preceded by dissection and visualization of the retroperitoneal structures - main vessels, kidneys, nerves,

ureters and others. When engaging the body-tail of the pancreas we prefer to perform an anatomical resection, usually with a prior splenectomy with ligation of the splenic vessels. An infiltration of the capsule at the head of the gland is treated with local resection and stitching of the parenchyma. Partial or atypical resection is performed in case of an infiltration of the stomach and the liver. Postresectional phrenic defects can be restored relatively easily, even if it requires the use of meshes. Similar early perioperative results are reported in series of patients who underwent surgery for locally recurrent colorectal cancer, where the average perioperative stay is nine days, morbidity - 24%, and mortality (5,6).

Localization of the disease near the pelvic bones, as well as the pelvic vessels often limits the possibility of achieving clean resection lines (7). Central recurrences usually affect the neorectum in the area of the anastomosis, and perineal recurrences follow an abdominoperineal extirpation of the rectum. The anterior recurrences affect the uterus, cervix or vagina in women and commonly - bladder, seminal vesicles, prostate gland in men. Rarely, recurrent formations infiltrate the sacrum. Lateral recurrences are the most unpleasant and affect the neuro-vascular and bone structures of the lateral walls of the pelvis. However, recurrences are often combined (8,9). Presence of distant metastases, lateral recurrence, infiltration of the iliac vessels, edema of the lower extremities, hydronephrosis, sacral infiltration over S2, peritoneal carcinomatosis and severe comorbidities are relative contraindications for resection according to some publications (6,10). In most patients with multivisceral resections in our group we had front and central recurrences. In the presence of positive findings and macroscopic residual tumor, the results correspond to cases where it is not affected by therapy (11,12). Patients with unresectable pelvic recurrence or extensive dissemination of the disease may benefit from exteriorisation of the small or the large bowel (ileostoma, colostoma) (6). Multimodal therapy significantly improves the prognosis. Studies report the use of high-preoperative radiotherapy which has achieved complete clinical response in 2 to 9% and reduce the stage in 30 to 65% (13). The application of intraoperative radiotherapy in addition to a preoperative such further increases the levels of survival (14). Locally recurrent CRC as a rule is locally

advanced and needs very careful assessment before planning a therapeutic strategy (15).

CONCLUSION

Locoregional recurrences of colorectal cancer are usually locally advanced and in a high percentage of cases accompanied by complications during the diagnosis. Only radical surgery in these cases gives hope for survival. Performing multivisceral resections in conditions of changed anatomical plans is a challenge for the surgeon. Perianastomotic recurrences without distant dissemination are the most favorable for radical surgical treatment. It is imperative that the implementation of en bloc resection without breaking the adherent to the tumor structures is important for the achievement of radicality. The experience of the surgical team, in the field of pelvic and HPB surgery is extremely important. The inclusion of neoadjuvant and adjuvant intraoperative radiation therapy, and chemotherapy can improve the results of surgery.

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