

DIFFERENTIATED SURGICAL TACTICS IN PATIENTS WITH COLIC POLYPS AND POLYPOSIS

Choice of tactics and method of surgical treatment in colic polyps and polyposis (CPP) remains the issue of the day. Surgical tactics has to be differentiated and specified, depending on the character of the disease and the level of involvement of colon. Timely diagnostic and prognosis of course of CPP is a prerequisite for development and choosing the most effective differentiated surgical tactics. In 102 patients, there were applied newly developed methods of complex diagnostics and differentiated surgical tactics. Differentiated surgical tactics should be applied using both endoscopic and radical operations, taking into account the extent and character of involvement, as well as the risk of malignization. Application of the developed algorithm of differentiated surgical tactics allows significant improving the treatment outcomes. Particularly this approach helps to increase significantly the recovery rate and reduce the rate of relapses.

Key words: Colic polyps and polyposis, risk of malignization.

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Introduction

Colic polyps and polyposis (CPP) become a global problem of 21st century, because number of patients suffering from this disease is steadily growing. As Axel et al. (2001), Bond (2000), Rivkin et al. (2005) noted, the nature of this disease constitutes progressive affection of colic mucosa with multiple polyps, that leads to significant metabolic disorders, anemia, and almost obligatory malignization (70-100%) of the polyps.

Modern approaches to surgical treatment of patients with colic polyps and polyposis (CPP)

Although the discussion on possibilities of conservative treatment of colic polyps, in particular by taking non-steroid anti-inflammatory drugs, aspirin, therapeutic enemas withcelandine juice, is still continuing (Bond, 2000; Mahmoud et al., 1998; Rivkin et al., 2005), majority of specialists (e.g., Barsukov et al., 2006; Bond, 2000; Knyazev, 2003; Vorobyov et al., 2000) adhere to the opinion, that the only adequate method of treatment of the disease is surgery, and the main reason for that is cancerous transformation of the polyps.

There are numerous publications on the issues of surgical treatment of diffuse colic polyposis. In 1923 Pennington suggested that the only radical treatment of diffuse colic polyposis is colectomy with permanent ileostomy. Until recent times, the single-stage operations like colectomy, subtotal colectomy were treated as unsafe for patients due to significant shifts in homeostasis caused. For this reason, number of authors preferred multi-step operations (e.g., Melnik et al., 2005, Rivkin et al., 2005). However, Rivkin et al. (2005) demonstrated that in this case 63.4% of patients develop complications, lethality rate reaches 19.4%, and risk of neoplastic transformation in the remaining parts of colon remains high. According to several researchers (Axel et al., 2001; Barsukov et al., 2006; Melnik et al., 2005; and Vorobyov et al., 2000) such complications

make impossible to perform the next step of surgical intervention due to increased extent of cancerous process or presence of remote metastases.

Fedorov and Dultsev (1983) and Nikitin (1981) studied the results of multi-step (93 patients) and one-step (174 patients) operations. Postoperative complications were observed correspondingly in 63.4 и 39.1% of patients, lethality rate comprised 19.4 и 9.7%.

In recent years colorectal surgeons in such cases tend to perform sphincter-preserving operations. There are two trends: one - coloproctectomy and forming the enteric reservoirs, which are recommended by Barsukov et al. (2006), Bond (2000), Nikitin (1981), Rivkin et al. (2005), Vorobyov et al. (2000); the second - using the method of endoscopic polypectomy for sanitation of the remaining parts of colon before surgery and in consequent periods of observation, which have been performed by Akemi (2000), Bories et al. (2006), Ming-Yao et al. (2005), and Veliev (2009).

Repici et al. (2009) and Zaikin et al. (2009) noted that coagulation method became widespread after the report of Donic (2003) about usage of high frequency current during fibrocolonoscopy in treatment of colic polyps, regardless to their localization. The experience suggests to consider this approach as safe and highly efficient in CPP cases.

Number of authors (e.g., Akemi, 2000, Ming-Yao et al., 2005, Nakajima, 2004) think, that active case finding and timely removal of polyps significantly reduces the risk of development of colon cancer in 99.5% of examined patients.

Eropkin et al. (2000) and Zaikin et al. (2009) note that since 1983, when the method of transanal removal of benign rectal tumors using transanal endoscopic microsurgery (TEM) was implemented for the first time, it is possible to remove neoplasms of lower and medium parts of rectal ampulla together with sub-mucosal layer, using specially designed operating rectoscope with three-D optics using up to four microsurgical instruments. This method provides adequate lateral resection line in case of benign tumors, and in case of malignant ones allows to expand the extent of intervention up to segmental or even to circular resection of the lesion site of the organ across to whole mass of enteric wall with formation of end-to-end anastomosis. The main application point of the method is treatment of "large" (more than 3 cm in diameter), trailing and malignant villous tumors, because electric coagulation in such cases leads to unsatisfactory results.

Spreading of polyps through the entire gastro-intestinal tract, grave condition of patients complicates both diagnostics and choice of surgical tactics. Some authors (e.g., Fedorov and Dultsev, 1983; Nikitin, 1981; Rivkin et al., 2005) propose combination of both endoscopic and open surgery, depending on the character of the lesion and clinical course of the disease. Authors note, that regardless to the progress in surgical treatment of CPP, the complications and fatality rates remain high enough and amount to 4-40%. Multi-step operations lead to highest number of complications and lethality. Complications often occur at colectomy with abdominoanal proctectomy with pulling-through the ileum to anal canal, as well as at subtotal colectomy with ileorectal anastomosis. So, according to the authors, there occur: strictures of the pulled-down bowel (2.8%) и ileostomic fistulas (1.2%). Ileus, which occurs in about 3.3% of patients, is the main cause of lethality at such operations. The main cause of lethality of patients in the long term is progression of cancer (24.1%) (Fedorov and Dultsev, 1983; Nikitin, 1981; Rivkin et al., 2005).

Thus, the choice of tactics and method of surgical treatment in CPP remains the issue of the day. Surgical tactics has to be differentiated and individual, depending on the character of the disease and the level of involvement of colon. Timely diagnostic and prognosis of course of CPP is a prerequisite for development and choosing the most effective differentiated surgical tactics.

Materials and methods

There were analyzed results of diagnostics and treatment of 183 patients with CPP, who were treated at Republican Coloproctology Research Center (RCPRC) and Republican

Oncology Research Center (RORC) of the Ministry of Health of Uzbekistan in 1998-2008. The patients were divided into 2 groups. The 1st (comparison) group consisted of 81 patients, in which traditional methods of examination and surgical treatment were used. The 2nd (main) group consisted of 102 patients, in which there were applied newly developed methods of complex diagnostics and differentiated surgical tactics developed by us. The main group consisted of 60 males (58.8%) and 42 females (41.2%), and the comparison one of 52 (64.2%) males and 29 (35.8%) females. Average age of patients in the main group was 42.0 ± 1.41 years, in the comparison group - 42.9 ± 1.68 years, i.e. patients of both groups were comparable by age and sex (Table 1).

TABLE 1. DISTRIBUTION OF PATIENTS BY SEX AND AGE

Age of patients (years)	Main group						Comparative group					
	Males		Females		Total		Males		Females		Total	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Under 20	3	2.9	4	3.9	7	6.8	2	2.5	0	0	2	2.5
20-29	10	9.8	15	14.7	25	24.5	16	19.7	5	6.2	21	25.9
30-39	12	11.8	2	2.0	14	13.7	3	3.7	2	2.5	5	6.2
40-49	9	8.8	14	13.7	23	22.5	12	14.8	7	8.6	19	23.4
50-59	13	12.7	7	6.9	20	19.6	11	13.6	13	16.0	24	29.6
60 and older	13	12.7	0	0	13	12.7	7	8.6	3	3.7	10	12.3
Total	60	58.8	42	41.2	102	100.0	51	63.0	30	37.0	81	100.0
Average age	45.6 ± 1.92		37.1 ± 1.85		42.0 ± 1.41		42.3 ± 2.17		44.0 ± 2.63		42.9 ± 1.68	

TABLE 2. DISTRIBUTION OF PATIENTS BY CLINICAL FEATURES, N=183

Clinical forms	Main group	Comparative group
Solitary polyps	33	19
Multiple polyps	18	27
Diffuse polyposis	43	28
Out of them Peutz-Jeghers syndrome	9	2
Malignant polyposis	8	7
Distal part of intestine	70	65
Left side	12	6
Subtotal	3	4
Total	17	6
Villous polyps	14	9
Adenomatous	35	22
Adenopapillomatous	27	18
Hyperplastic	10	11
Proliferative	5	9
Cancer in situ	11	13
Complications		
Posthemorrhagic anemia	22	31
Cachexy	7	2
Strictures	6	3
Chronic colonic ileus	7	11
Malignization	10	5
Toxic dilatation of colon	2	1
Acute colonic ileus (intussusception)	3	5
Bleeding from rectum	35	32
Colonic perforation	1	1

The main group had more severe clinical features than the comparison one. The clinical forms of CPP in patients are presented in Table 2.

Substantiation of the algorithm of differentiated surgical tactics

We have developed the complex of diagnostic and prognostic criteria for evaluation of disease severity and risk of malignization of CPP. There were identified 4 malignization risk groups - minimal, moderate, significant and high risk. On the basis of published data and on our own experience we developed the algorithm of differentiated surgical tactics in patients with CPP, depending on the malignization risk group (Figure 1).

1 group - minimal malignization risk, includes patients with preclinical phase and initial disease symptoms, with solitary adenomatous and villous polyps no bigger than 5-8 mm, less than 10 items in total, in most cases with involvement of rectum only, that is why transanal and endoscopic methods of surgical treatment are used.

2 group - moderate malignization risk, includes patients with multiple proliferating and hyperplastic polyps with size not exceeding 15 mm, up to 50-100 pieces in total, mainly with involvement of rectum and distal parts of sigma. We, as the majority of modern authors (e.g., Galimov et al., 2008, Sotnikov et al., 2007), adhere to tactics of dynamic endoscopic bipolar electrocoagulation of these polyps.

While performing the endoscopic polypectomy we were guided by the following criteria:

1. Excision has to be started from the most proximally located adenomas, to avoid traumatizing the eschar formed after coagulation during sometimes unavoidable multiple insertions of endoscope;
2. One should not try to remove all the polyps in one step, depending of their quantity and size the polyps, the aim of the endoscopic intervention can be fulfilled in several steps with removal of 20-30 polyps in one session;
3. First of all one should remove the biggest and suspicious in terms of malignization polyps, in which the electrocoagulation is performed on the level of basement of the pedicle with subsequent histological examination of not less than 3-4 of them, capturing into microscopic section all parts of the polyp (basement, peduncle and head);
4. All patients have to be kept under observation by the specialized facility; intervals between check-ups should not exceed 6 months.

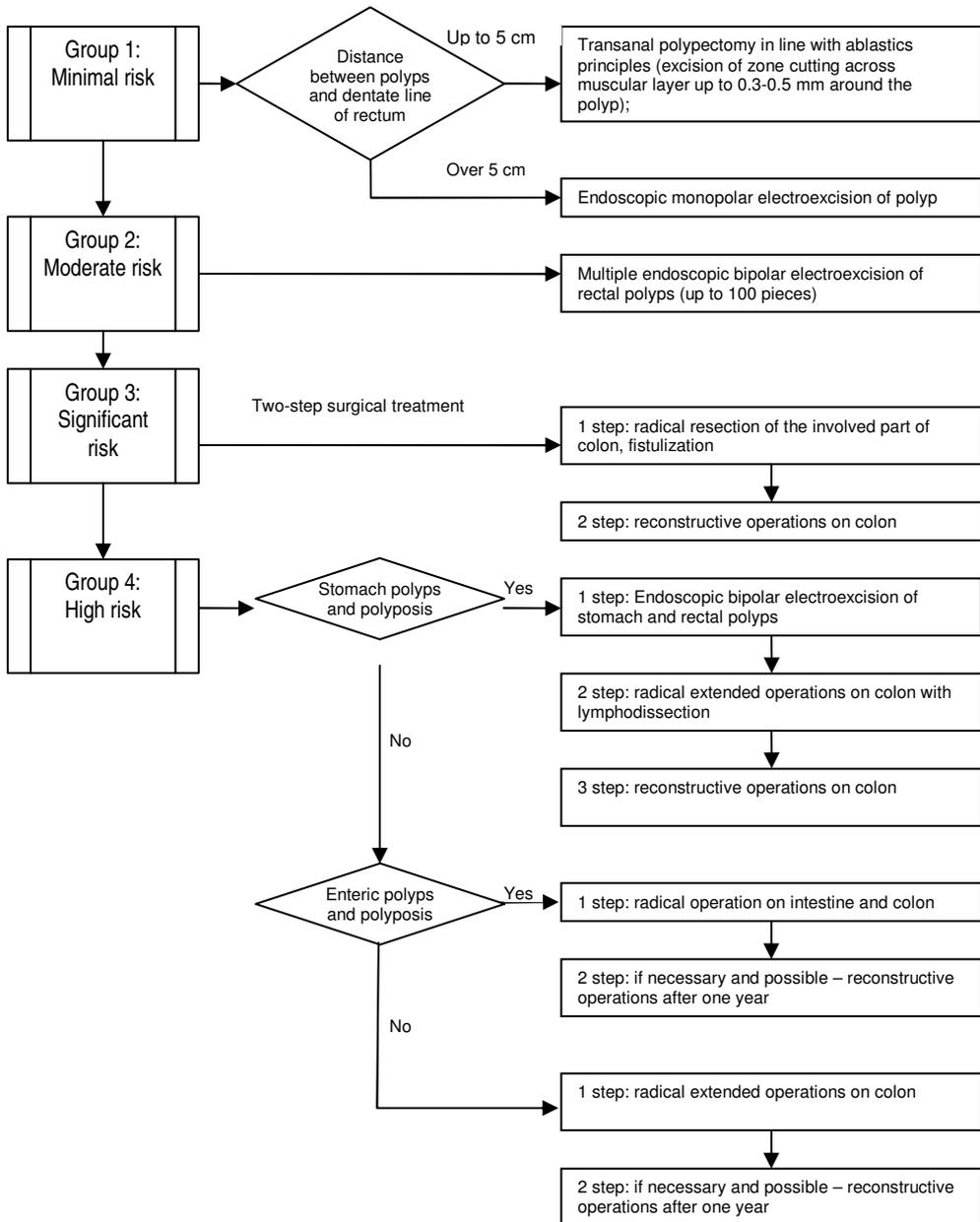
3rd group - significant malignization risk. The group comprises patients with diffuse polyposis, initial presentations of Peutz-Jeghers, Trucot, Gardner syndromes, with polyps sized between 15-30 mm, 100-500 pieces in total, of adenopapillomatous, proliferative, and dysplastic nature. In this group, there is implemented two-step radical surgery tactics. During the 2nd step, if necessary, reconstructive operations are performed. In these patients, depending on the character, level and extent of lesion, either one-step resections of the involved parts of colon, or combination of resection with unloading ileostomy are performed. The second variant is usually implemented as urgent operation in weak patients with significant weight loss. In several months - after stabilization of their condition - reconstructive operation with closure of the ileostomy is performed.

In number of cases, when other organs of gastro-intestinal tract are involved - intestine, stomach or gallbladder - the simultaneous operations are performed in those cases where general condition of the patient allows.

In the group 4 - high malignization risk, which includes patients with total diffuse polyposis of colon, intestinal polyposis of gastrointestinal tract (Peutz-Jeghers, Trucot, Gardner syndromes), malignant polyps or transformation from cancer in situ into adenocarcinoma - there are used 3 variants of surgical tactics.

If there are gastric polyps, then the endoscopic bipolar electrocoagulation of gastric and colonic polyps is performed as the 1st step. Radical extended operations on colon with lymphodissection are performed on the second step, and reconstructive operations - on the 3rd stage.

FIGURE 1. ALGORITHM OF DIFFERENTIATED SURGICAL TACTICS IN PATIENTS WITH COLIC POLYPS AND POLYPOSIS



Note: 1. During radical and extended operations simultaneous operations are also performed if necessary; 2. In cases of verification of carcinogenesis after radical extended operations the adjuvant chemotherapy according to schedule by Mayo is necessary.

In case of polyps of intestine the first radical extended operations are performed on intestine and colon, and roughly in 1 year after that - reconstructive ones.

In case if there is no polyps in stomach and intestine the two-step tactics is used - radical extended operations on colon as the first step and reconstructive operations after 1 year as the second step. We propose the algorithm of differentiated surgical tactics in patients with CPP (Figure 1).

Results and discussion

Table 3 shows the types of operations performed in the main and comparison groups. One can see that the groups are comparable by the character and volume of operations.

TABLE 3. TYPES OF OPERATIONS IN PATIENTS WITH CPP, ABS. (%)

Type of operation	Main group, n=85	Comparative group, n=73
Transanal polypectomy	29 (34.1)	19 (26.0)
Total colectomy, ileostomy	9 (10.6)	4 (5.5)
Abdominoanal proctectomy with pull-down of proximal parts of colon to anal canal	22 (25.9)	15 (23.3)
Sub-total colectomy with colorectal anastomosis	1 (1.2)	1 (1.4)
Abdominoanal proctectomy, colostomy	4 (4.7)	13 (17.9)
Hartmann's operation	3 (3.5)	2 (2.7)
Left hemicolectomy with transverso-rectal anastomosis	1 (1.2)	2 (2.7)
Duhamel's operation with colorectal anastomosis	0 (0)	1 (1.4)
Abdominoperineal extirpation of rectum, colostomy	0 (0)	2 (2.7)
Laparotomy, enterotomy, proctotomy, polypectomy, resection of intestine, side-to-side anastomosis	1 (1.2)	2 (2.7)
Sigmoid colectomy with colorectal anastomosis (CDH-29 or CDH-31 apparatus)	1 (1.2)	4 (5.5)
Total coloproctectomy, disinvagination of intestine, ileostomy	0 (0)	1 (1.4)
Preventive double-barrel ileostomy	1 (1.2)	0 (0)
Delorme operation	1 (1.2)	0 (0)
Miculicz operation	1 (1.2)	0 (0)
Reconstructive operations	11 (12.9)	5 (6.8)

Simultaneous operations were performed in 25 patients. Abdominoanal proctectomy with pulling down of proximal parts of colon to anal canal was combined in 5 patients with removal of ovarian cysts, hysterectomy, echinococcectomy and Billroth I partial gastrectomy. Left hemicolectomy with transverse-rectal anastomosis in 2 patients was combined with cholecystectomy and ureterolithotomy. Right hemicolectomy with ileotrasversoanastomosis in 4 patients was combined with ovarian cystectomy and echinococcectomy. Sigmoid colectomy with colorectal anastomosis in 3 patients was combined with Kummel's posterior rectopexy and amputation of uterus. Sub-total colectomy with colorectal anastomosis in 2 patients was combined with appendectomy and ovarian cystectomy. Total colectomy with ileorectal anastomosis in 5 patients was combined with cholecystectomy, gastric resection and herniotomy. Sigmoid colectomy with colorectal anastomosis in 4 patients was combined with appendectomy, ovarian cystectomy and removal of the fibroids. Reconstructive operations in 4 patients combined with cholecystectomy, gastric resection and herniotomy. In 4 patients gastric resection and in 1 patient cholecystectomy have been performed due to Peutz-Jeghers syndrome (diffuse polyposis of stomach and gallbladder).

The data we brought confirm the correctness of the chosen surgical tactics and indicate the need to improve the methods of early diagnostics of CPP. Table 4 shows results of treatment in two groups. As it is seen, recovery rate in the main group was significantly higher than in the comparison one - $83.5\pm 3.7\%$ vs. $65.7\pm 5.2\%$, and the rate of relapses was significantly lower - $1.2\pm 2.2\%$ vs. $12.3\pm 3.5\%$, accordingly.

TABLE 4. RESULTS OF SURGICAL TREATMENT OF PATIENTS WITH CPP IN THE COMPARISON GROUPS

Treatment outcome	Main group, n=85		Comparative group, n=73	
	Abs.	%	Abs.	%
Recovery	71	$83.5\pm 3.7^*$	48	65.7 ± 5.2
Improvement	8	$9.4\pm 2.8^*$	12	16.4 ± 4.2
No change	1	1.2 ± 1.2	4	5.5 ± 2.4
Worsening	1	1.2 ± 1.2	0	0 ± 0
Relapse	1	$1.2\pm 2.2^*$	9	12.3 ± 3.5
Fatal outcome	3	$3.5\pm 2.0^*$	0	0 ± 0

Note: * - Differences between the indicators of main and comparative group are statistically valid ($P < 0.05$).

At the same time, one should note, that there were no fatal outcomes in the patients of comparison group, whereas in the main group 3 patients ($3.5\pm 2.0\%$) died due to cardiac failure (2 of patients) and ileus (1). Cardiac failure was a cause of death of 1 patient with multiple polyps who had undergone reconstructive operation and 1 patient with diffuse polyposis after simultaneous operation. Ileus was a cause of death of 1 patient with diffuse polyposis, who had undergone radical operation (abdominoanal proctectomy, subtotal colectomy, single barrelled ascendostomy). As seen, fatal outcomes in the main group were attributed to severe baseline condition, and in 2 out of 3 cases they occurred after expanded reconstructive operations.

Conclusion

In patients with colonic polyps and polyposis the differentiated surgical tactics should be applied, using both endoscopic and radical operations, taking into account the extent and character of involvement, as well as the risk of malignization.

In order to choose differentiated surgical tactics in these patients 4 groups of severity of lesion and malignization risk have to be distinguished on the basis of criteria we developed earlier.

Application of the developed algorithm of differentiated surgical tactics allows improving the treatment outcomes significantly, particularly to increase recovery rate and reduce the rate of relapses several times.

When necessary, the operations on colon have to be complemented by operations on other gastrointestinal tract organs (stomach, intestine, gallbladder etc.).

There is a need in further development of surgical tactics, preoperative preparation, anaesthetic and resuscitation management in patients with colonic polyps and polyposis, especially in the 3rd and 4th risk groups, in debilitated patients and in cases of urgent operations.

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