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LAPAROSCOPIC AND LAPAROSCOPIC-ASSISTED INTERVENTIONS IN THE SURGERY OF ACUTE ADHESIVE SMALL INTESTINAL OBSTRUCTION

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Abstract:

The results of complex diagnostics in 117 patients with OSTCN have been studied. The choice of the method of laparoscopic (64,3%) and laparoscopic-assisted (23,2%) surgical treatment of OSTCN in each case is strictly personalized and depends on the severity of adhesions, presence or absence of necrosis of the small intestine, character of exudate in the abdominal cavity, general condition of the patient according to the ASA scale and presence (more than 4 cm) or absence of total dilation of the small intestine loops; the presence of "acoustic window" for abdominal cavity puncture should also be taken into account. The application of differentiated surgical tactics with the use of the developed methods of surgical interventions, as well as cytokine, antioxidant, antihypoxant and serotonin therapy contributed to the decrease in the incidence of early postoperative intra-abdominal and wound complications by 12.0%, compared to the control group patients - 23.3%, also the number of distant postoperative complications decreased to 4.6% of cases, compared to the control group - 16.3%.

Keywords: Acute adhesive small intestinal obstruction, surgical treatment, laparoscopy.

RELEVANCE. Adhesive disease of the abdominal cavity is one of the most important and still unresolved problems in the field of emergency abdominal surgery. Adhesive disease is a perverse response from the body that occurs during surgery or an inflammatory process, and which manifests itself in the form of the formation of an excessive amount of connective tissue. Every year, over 2% of patients with a history of surgery are admitted to surgical clinics, while 50-75% of them are diagnosed with acute adhesive small intestinal obstruction (ACST). The frequency of acute kidney injury has increased by 2 times in recent years, and this indicator does not tend to decrease. In the structure of all surgical pathologies diagnosed in hospitals, the incidence of acute kidney injury is 3.5%. Cases of recurrence of this disease after the performance of adhesolysis are noted in 20.3-71.0% of cases. Due to recent achievements in the field of medicine, the possibilities of conducting a deeper study of the mechanism of development and diagnosis of adhesive abdominal cavity disease and acute kidney injury have significantly expanded.

It should be emphasized that in the early stages of the introduction of laparoscopic technologies into surgical practice, the presence of adhesions in the patient was one of the absolute contraindications for laparoscopic interventions. However, as endoscopic technologies improved and surgeons improved their skills, laparoscopic interventions began to be used in patients with a history of abdominal surgery for diagnosis and treatment, and somewhat later they began to be used in surgical treatment of patients with OCD. Videolaparoscopic adhesiolysis reduced the likelihood of adhesions in the abdominal cavity by 70-80%, but it does not always give the expected result, and sometimes requires repeated surgical interventions.

THE PURPOSE OF THE STUDY. Improvement of the results of complex surgical treatment of patients with acute adhesive small intestinal obstruction.

RESEARCH MATERIALS AND METHODS. The results of complex diagnostics and surgical interventions in 117 patients with acute kidney injury hospitalized in the period from 2018 to 2023 at the Navoi branch were studied. All patients were divided into 2 groups: the main (prospective) group I consisted of 56 (47.8%) patients who underwent laparoscopic and laparoscopic–assisted interventions with a comprehensive developed by us pathogenetic conservative therapy in the postoperative period; Control group II (retrospective) consisted of 61 (52.2%) patients who underwent conventional open traditional interventions.

There were 46 (39.3%) men and 71 (60.7%) women among patients with acute renal failure.

Data analysis shows that 27 (23.1%) patients were

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hospitalized up to 6 hours, 33 (28.2%) from 7 to 12 hours and 33 (28.2%) from 13 to 24 hours, making up 93 (79.5%) patients admitted to the clinic up to 24 hours from the moment of the onset of the disease. Within 24 hours of the onset of the pathology, 24 (20.5%) patients were admitted.

Among patients with acute renal failure, in 110 (94.1%) cases it developed after various open traditional surgical interventions on the abdominal organs, in 7 (5.9%) cases it occurred without prior surgery.

In patients of both groups, in 31 (26.5%) cases, acute kidney injury developed after surgical interventions for acute destructive appendicitis and its various complications (appendicular abscess and appendicular abscess infiltrate, perforation of the appendix), in 28 (23.9%) – after surgery for obstetric and gynecological pathology (cesarean section, ovarian cyst, uterine fibroids, ovarian apoplexy, etc.), in 10 (8.6%) – due to gallstone disease, in 17 (14.5%) cases – after perforation of gastric and duodenal ulcers, in 7 (5.9%) – pinched inguinal and umbilical hernias, perforation of small intestine ulcers – in 6 (5.1%) cases and in 11 (9.4%) cases after penetrating abdominal wounds.

23 (20.9%) of the 110 patients with acute renal failure had a history of 2 or more surgical interventions. Thus, 16 patients had a history of 2 operations, 5 patients had 3 surgical procedures, and 2 patients had a history of 4 operations.

Acute renal failure in patients developed at various times after surgery. Thus, early acute renal failure within 1 month after surgery occurred in 17 (14.5%) cases, from 1 to 6 months – in 21 (17.9%) cases, from 6 months to 1 year – in 23 (19.6%), from 1 to 2 years – in 13 (11.1%), from 2 to 3 years – in 17 (14.5%) and more than 3 years - in 19 (16.2%) cases.

Among 117 operated patients from both groups, single (limited) adhesions occurred in 67 (57.3%) people, and multiple (widespread) adhesions occurred in 50 (42.7%) cases.

Data analysis shows that in 36 (30.7%) cases in patients of the main group and in 37 (31.6%) cases in patients of the control group, acute renal failure without necrosis of the small intestine occurred, in 44 (37.6%) cases in general in patients of both groups (20 (17.1%) in the main group and 24 (20.5%) – control group) acute kidney injury was complicated by necrosis of the small intestine.

The presence of diffuse peritonitis was diagnosed in 64 (54.7%) patients, the presence of general peritonitis in 53 (45.2%) patients. At the same time, serous peritonitis was detected in 29 (24.8%) cases, hemorrhagic peritonitis – in 34 (29.1%) patients, serous fibrinous peritonitis - in 35 (29.9%) cases, purulent fibrinous peritonitis was diagnosed in 19 (16.2%) patients.

In the patients with acute renal failure we observed, various methods and methods of surgical interventions were performed in accordance with the proposed criteria. Open laparotomy, laparoscopic and laparoscopically assisted laparoscopic interventions were performed.

Laparotomy operations were performed in 61 patients from the control group. Of these, 31 (50.8%) patients underwent adhesiolysis with drainage of the abdominal cavity, and 30 (49.2%) patients underwent dissection of adhesions and resection of necrotic small intestine with the formation of various variants of intestinal anastomoses followed by intubation of the small intestine.

In 51 cases, minimally invasive interventions were performed in patients with acute renal failure from the main group. Thus, in 36 (64.3%) cases with single adhesions and local development of the adhesive process, videolaparoscopic adhesiolysis with drainage of the abdominal cavity was performed (Fig. 5). In 13 (23.2%) cases in which patients had limited non-prolonged intestinal necrosis with hemorrhagic peritonitis, videolaparoscopic-assisted adhesiolysis was performed, resection of a section of the small intestine with side-to-side anastomosis and drainage of the abdominal cavity (Table 2). It is worth emphasizing that during laparoscopic diagnosis in 7 (12.5%) patients, the identified adhesive process was widespread with the presence of pronounced scarring and necrotic lesions of the intestinal wall at a distance of more than 25 cm (Fig. 6), with the presence of widespread purulent fibrinous peritonitis, which required prolonged nasogastric intubation and access conversion for laparotomy with total dissection of adhesions.

In 4 patients, side-to-side anastomoses were performed after intestinal resection, in 3 cases, due to the presence of widespread purulent-fibrinous peritonitis, the necrotic part of the small intestine was resected with the formation of a Y-shaped small intestinal anastomosis and nasointestinal intubation of the small intestine.

Table 2
The nature of surgical interventions (n=117)

Name of the operation	Groups of patients			
	The main group		The counter group	
	abs.	%	abs.	%

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Laparotomy. Dissection of adhesions. Drainage of the abdominal cavity	-	-	31	50,8
Laparotomy. Dissection of adhesions. Small intestine resection with side-to-side anastomosis.	-	-	17	27,8
Intubation of the small intestine. Drainage of the abdominal cavity	-	-	4	6,5
Laparotomy. Dissection of adhesions. Small intestine resection with a Y-shaped yunoyunoanastomosis	-	-	3	4,9
Laparotomy. Dissection of adhesions. Resection of the small intestine with Y-shaped ileoascendoanastomosis. Intubation of the small intestine. Drainage of the abdominal cavity	-	-	6	9,8
Laparotomy. Dissection of adhesions.	7	12,5	-	-
Small intestine resection with ileo-transverso anastomosis	36	64,3	-	
Diagnostic laparoscopy. Laparotomy. Adhesiolysis.	13	23,2	-	-
Small intestine resection with side-to-side anastomosis.	56	100	61	100

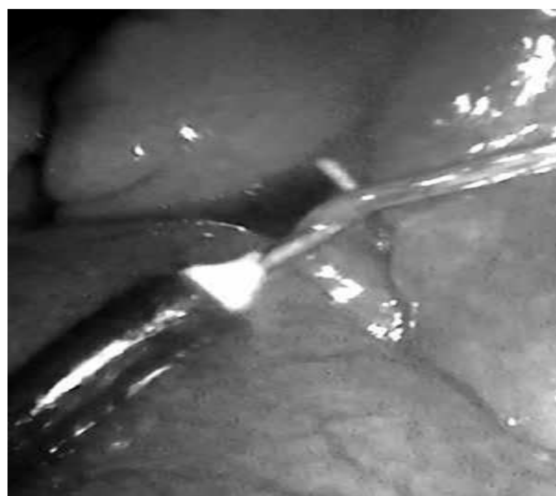

Fig.1. - Endophoto. Cord-like ligament, laparoscopic adhesiolysis

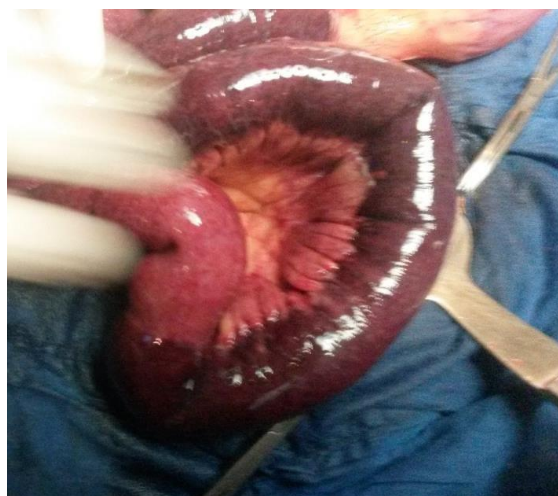

Fig.2. - Endophoto. Cord-like ligament, laparoscopic adhesiolysis

To improve the results of surgical treatment of acute renal failure, it is important to reduce the incidence of intestinal paresis and the development and recurrence of adhesive intestinal obstruction. For this purpose, the clinic has developed a method of complex drug treatment of adhesive small intestinal obstruction. The essence of the developed technique is based on the fact that with prolonged intestinal paresis, intestinal insufficiency syndrome and the development of adhesions and small intestinal obstruction, lipoperoxidation, cytokine status and serotonin deficiency are activated, as well as microcirculation disorders in the mesentery and small intestine wall. In this regard, for the treatment of adhesive small

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intestinal obstruction, prevention of recurrence of adhesive disease and early postoperative complications in the early postoperative period, i.e. On the first day after surgery, serotonin adipinate 1.0 ml 3 times a day, mexidol 2.0 iv 2 times a day, tivortin 100.0 ml IV 1 time a day are used comprehensively, and enoxatil 0.6 ml subcutaneously 1 time a day was also used to improve microcirculation in the small intestine wall. daily for 5-7 days, depending on the severity of the disease and the severity of changes in laboratory parameters. Compensation of serotonin deficiency, normalization of cytokine status and lipid peroxidation, as well as improvement of microcirculation in the mesentery and small intestine wall contribute to the adequate restoration of motor evacuation function of the small intestine in the early postoperative period.

The results and their discussion. The nature and frequency of early postoperative complications and mortality in patients with acute renal failure in the main group were evaluated according to the scale of assessment of postoperative complications proposed by P.A. Clavien and D. Dindo (2009), which are shown in Table 2.

Table 2
The nature of early postoperative complications in both observed groups of patients according to the Clavien – Dindo classification

The nature of the complications	Degree of severity	The main group (n=56)		Control group (n=61)	
		Абс.	%	Абс.	%
Suppuration of a trocar wound Suppuration of a laparotomy wound	II	3 5	5,3 8,9	- 5	- 8,2
Postoperative intra-abdominal abscesses Early recurrent small intestinal obstruction Failure of anastomosis sutures	III	- - -		2 3 2	3,2 4,9 3,2
Total	-	8	14,3	12	19,7

Note: one patient had 2 or more complications at the same time.

In total, 8 (12%) cases showed the development of various early postoperative complications in patients from the main group. Thus, in 3 (5.3%) cases and 5 (8.9%), suppuration of trocar and laparotomy wounds developed, respectively, which were treated with a local conservative method. There was 1 (1.8%) fatal outcome caused by PE.

In the control group of patients, 12 (19.7%) cases developed various postoperative complications in the early postoperative period. Thus, suppuration of a laparotomy wound occurred in 5 (8.2%) cases, which were treated in a comprehensive conservative manner. The complex complications that arose in the early postoperative period were intra-abdominal abscesses (n=2), which required relaparotomy, autopsy, and drainage. Early recurrent adhesive small intestinal obstruction developed in 3 (4.9%) cases, while relaparotomy, dissection of adhesions, intubation of the small intestine, sanitation and drainage of the abdominal cavity were also performed. In 2 (3.2%) cases, relaparotomy was performed for the failure of sutures of small intestinal anastomoses, in which repeated resections of the small intestine were performed (n=2). In the postoperative period, 3 (4.9%) patients in the control group died from increased intoxication and the development of multiple organ failure (n=2), as well as due to sluggish postoperative peritonitis (n=1).

Another important point in the surgical treatment of patients with acute renal failure is the study of long-term treatment outcomes. The main criterion for its effectiveness is the frequency of recurrence of adhesive disease with the development of recurrent acute renal failure, as well as other specific complications. The long–term results of surgical intervention effectiveness in patients with acute renal failure were studied over a period of 6 months to 5 years and were studied in 96 (82.1%) patients (45 in the main and 51 in the control groups) (Table 3).

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Table 3
Long-term postoperative complications in patients with acute renal failure in the main and control groups (n=91)

The nature of the complications	The main group (n = 45)		Control group (n = 51)		p
	абс.	%	абс.	%	
Recurrence of acute	2	4,4	6	11,7	<0,001
Postoperative	2	4,4	4	7,8	>0,05
ventral hernia	4	8,8	10	19,6	<0,001

Note: p is the statistical significance of the difference in indicators between the groups (according to the exact Fisher criterion)

In the patients of the main group, cases of acute kidney injury recurrence occurred in 2 (4.4%) cases, which were eliminated by complex conservative therapy. The development of other complications – postoperative ventral hernia occurred in 2 (4.4%) cases, and was operated on as planned, whereas, in general, 10 (19.6%) patients in the control group experienced the development of long-term postoperative complications in the form of recurrence of acute renal failure - 6 (11.7%) and 4 (7.8%) in this case, a postoperative ventral hernia. The latter required surgical intervention – herniation. It should be noted that 6 (11.7%) patients had recurrent episodes of acute renal failure repeatedly, they were stopped by complex conservative measures, however, in 3 (5.8%) of them, if conservative treatment was ineffective, repeated surgical intervention was required to eliminate intestinal obstruction.

Thus, the management of patients with acute kidney injury according to the pathogenetic concept of pathology development in patients of this category and the diagnostic algorithm developed by us, as well as the implementation of personalized surgical tactics, taking into account the developed criteria for the selection of methods of open, laparotomic, laparoscopic or laparoscopic-assisted treatment of patients with acute kidney injury using a comprehensive conservative pathogenetically based method of prevention and treatment of patients in the main group. The early rates of postoperative complications were reduced to 14.3%, deaths – up to 1.8%, compared with patients in the control group, where 11.5% of 3 ct postoperative complications occurred in 23.3%, deaths – in 6.7%. The incidence of long-term postoperative complications decreased to 8.8% of cases in the main group, compared with the control group, which had 19.6% of complications.

CONCLUSIONS.

1. The choice of the method of laparoscopic (64.3%) and laparoscopic-assisted (23.2%) surgical treatment of acute kidney injury in each case is strictly personalized and depends on the severity of the adhesive process, the presence or absence of necrosis of the small intestine, the nature of exudate in the abdominal cavity, the general condition of the patient according to the ASA scale and the presence (more than 4 cm) or the absence of total expansion of the loops of the small intestine, the presence of an "acoustic window" for abdominal puncture should also be taken into account.
2. The use of differentiated surgical tactics using the developed methods of surgical interventions, as well as cytokine, antioxidant, antihypoxant and serotonin therapy, reduced the incidence of early postoperative intra–abdominal and wound complications by 12.0%, compared with patients in the control group - 23.3%, and the number of long-term postoperative complications decreased to 4.6% of cases, compared with the control group - 16.3%.

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