

EFFECTIVENESS OF ENDOVIDEOLAPAROSCOPIC TECHNOLOGY IN THE TREATMENT AND EARLY PREVENTION OF INTESTINAL OBSTRUCTION IN CHILDREN

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Abstract:

The data presented in the article allow to reveal some joints of the pathogenetic ring of the adhesion process in the abdominal cavity and to prevent it early. Intraoperative application of FLA activates fibrinolysis in the blood, thereby blocking the transfer of fibrinogen to fibrin and collagen. Performing videolaparoscopic adhesion with intraoperative use of FLA improves intestinal obstruction and reduces acute obstructive bowel obstruction by 97,7%, saves patients from laparotomy, postoperative complications, and recurrence by 18,7%.

Keywords: Conjunctivitis, acute conjunctival obstruction, prevention, children laparoscopic adhesions

THE URGENCY OF THE PROBLEM:

Despite modern advances in medicine, the process of postoperative adhesions in the abdomen and peritoneal adhesions remains one of the most pressing problems of general and pediatric surgery.

The main reason for the development of postoperative adhesions is damage to the mesothelium of the peritoneum.

The number of patients suffering from peritoneal adhesions is increasing in proportion to the number of surgical interventions, and complications of adhesions are one of the leading causes of postoperative mortality [A. S. Ermolova - 2015; Z. Sh. Abashidze, co-authors -2017; O. E.. Lutsevich, co-authors -2017; I. Ya. Bondarevsky, co-authors - 2018].

Many issues of the pathogenesis of peritoneal adhesions: its prognosis, treatment tactics and prevention remain controversial [Boyko, V. V., co-authors - 2013, E. Yu. Dyakonova, co-authors- 2015, A. G. Kriger - 2017].

According to the International Adhesion Society (2017), 1% of patients previously operated on for adhesions are treated in surgical departments each year, with 45-65% of this category of patients developing intestinal obstruction with high mortality.

Conservative treatment of adhesions is less effective, and postoperative recurrences occur in 30 to 70% of cases. B. B. Barkanov - 2013; M. E.. Timofeev, co-authors - 2015; A. V. Sajin, co-authors - 2018; R. T. Beyene, S. L. Kavalukas - 2015. C. T. Aquina, F. J. Fleming - 2017; S. Di Saverio, A. Birindelli, R.T. Broek [et al.] - 2018; and other authors point out that there are no reliable means of preventing the adhesion process of the postoperative abdominal cavity.

THE AIM OF THE STUDY:

To improve the results of early prevention and treatment of adhesions in children by alternating the tactics of videolaparoscopic adhesion.

MATERIALS AND METHODS:

In 2009-2019, the Republican Center for Minimally Invasive and Endovisual Research and Practice performed video laparoscopic adhesionization on 41 sick children aged 3 to 18 years. Of these, 31 were hospitalized for the first time, 10 had acute appendicitis, 7 had conservative treatment, and 3 underwent conventional laparotomy for acute appendicitis (1 received FLA and 2 received admission. did not). (FLA consists of the following components: fibrinolysin 20,000 ed, heparin 10,000 ed, hydrocortisone 125 mg, gentamicin 80mg and novocaine 0.25% - 200 ml).

Patients in all major groups had previous surgery, of which 31 cases (75.7%) had primary appendectomy, 7 (17%) patients had appendicular peritonitis, and 2 (4.9%) children had surgery due to closed abdominal injuries. (2.4%) underwent hernioplasty.

In the preoperative period, scheduled intensive conservative therapy was performed to avoid intestinal obstruction.

None of these patients had conservative treatment of intestinal passage and intestinal obstruction. Because conservative therapy was ineffective, videolaparoscopy was performed for two purposes: the first was diagnostic, abdominal revision, and obstruction correction, while the second was laparoscopic adhesionis, visceroparietal, interstitial adhesions, and restoration of intestinal passage.

Several clinical and laboratory analyzes were performed in the preoperative period in children in this control group; the coagulogram was examined for 7 days before surgery, during surgery, and in the postoperative period. In the preoperative period, blood clotting time was almost normal in all patients, averaging 246.1 ± 2.4 s, blood flow retraction $39.0 \pm 0.5\%$, plasma heparin tolerance (10.4 ± 0.3 min), and fibrinogen levels (3.84 ± 0.6 g / l) were within the upper limits of the norm.

CONCLUSIONS AND DISCUSSIONS:

In order to perform videolaparoscopic adhesionization in the abdomen using endovideolaparoscopic technology, FLA was first administered intra-abdominally after SO₂ insulation, and then factors that were resistant to revision were identified.

When the viscerovisceral adhesion was separated, the adhesion was adhered and it was separated using a manipulator, a dissector, and sharp and blunt mono or bipolar coagulation.

The pores between the pores were easily separated in a blunt way. In 23 (56.1%) of the 41 patients, it was not difficult to separate the hernia from the postoperative scars. In the remaining 8 (19.5) patients, intestinal adhesions were detected: 1 patient had flat adhesions, 3 patients had visual inflammation due to microcirculatory disorders in the intestinal wall, and 4 (9.8%) children had 2/3 of the abdominal cavity. occupied diffuse adhesion processes.

Conglomerates were also observed in the intestinal loop and interstitial area. Due to technical difficulties, it was decided to carry out 2 (4.9%) conversions in a large number of massive adhesions - laparotomy, examination of the abdominal cavity, cutting of deformed adhesions in the intestinal adhesions, separation of intestinal loops, abdominal drainage. Nasogastroduodenal probing of the stomach was performed in the intensive care unit.

The colon is then inserted through the exhalation tube as far as possible into the ascending area of the colon.

In the postoperative period, on day 1, these patients were injected into the abdomen gradually with FLA (in order to activate proteolysis and fibrinolysis processes, to absorb primary fibrinosis) and antibiotics.

In any adhesion intestinal obstruction, whether it is a visceral intestinal obstruction (chilbirsimon, yassili, charvili), it causes intestinal compression, while laparoscopic adhesionis should be aimed at separating the adhesions from the intestines.

The results of the conducted laparoscopic adhesion depending on the location and appearance of adhesions (Blinnikov O.I., classification 1993) are given in Table 1 below.

Table 1.

Evaluation according to the level of location of the bonding process (main group n = 41)

Types of adhesions	Depending on the level of location of the bonding process O.I. Blinnikov (1993)					
	1 level	2 level	3 level	4 level	Total	
					a6c	%
Flat	-	3	4	1	8	19,5
Uneven	-	8	16	3	27	65,9
Fatty	-	2	3	1	6	14,6
Total	-	13	23	5	41	100,0

As can be seen from the table, 65.9% of children and related adhesions.

Clear results were noted when laparoscopy and laparoscopic adhesion were performed when comparing coagulograms of patients who received and did not receive FLA.

Although laparoscopic adhesion was performed despite FLA, hypercoagulability was recorded at 164.8 ± 1.6 s during surgery and normocoagulation at laparoscopy was 212 ± 1.8 s ($R < 0.05$).

In the first and subsequent days after surgery, hypocoagulation was observed in the control group, and moderate (313 ± 3.4 sec and 226 ± 3.8 sec) hypocoagulation in the main group.

Thus, changes in the symptoms of obvious inflammation in the abdominal cavity lead to a rapid deterioration of the functional state and coagulogram parameters of vital organs and systems, marked hyperfibrinogenemia and complication of fibrinolysis.

These data once again testify that low-traumatic operative methods are necessary for the early prevention of abdominal adhesions. FLA dissolves fibrin strands, normalizes fibrinolysis, and most importantly prevents the formation of adhesions. For early prophylaxis of the adhesion process, the adhesion process can be prevented by performing low-trauma videolaparoscopic operations in the abdomen, as well as by adjusting the fibrinogen concentration and fibrinogen activity in the deposit by injecting FLA into the abdomen.

In patients who underwent surgery using the laparoscopic adhesion method, their physical activity recovered several times faster than in the control group. In rare cases, after conventional surgery, patients were able to sit in their beds for 3-4 days after surgery, and were able to walk freely and self-care after intensive therapy.

After laparoscopic adhesion, patients began eating for the first 6–12 hours.

Table 2.

A comparative description of the recovery of physical activity in patients after surgical treatment in the compared groups

Postoperative follow-up	OBIT operative treatment methods.		
	Laparotomy adhesiolysis without FLS (n = 17)	Laparotomy adhesiolysis + FLS (n = 21)	Laparoscopic adhesion + FLS (n = 41)
Duration of operative intervention (min)	114,2±8,4	105,6±4,6	60,2±0,9**
Physical activity of the patient (per day)	5,6±0,6	4,0±0,8	1,6±0,3**
Meal interval (hours)	48-72	48-72	6-10***
Recovery periods in IDRB (per day)	4,5±0,1	3,5±0,14	1,5±0,02**
Duration of hospital treatment, bed-days	10,4±1,2	8,2±0,8	6,0±0,5*

* - validity of differences with respect to group 1 (***) - $P < 0,001$, ^ - validity of differences with respect to group 1 (^ - $P < 0,01$, ^^ - $P < 0,001$

As can be seen from Table 2, there is no difference between the first two control groups.

Reliable evidence of physical activity ($P < 0.05$) demonstrates the effectiveness of the selected video laparoscopic surgical method in acute intestinal obstruction.

No complications of injuries were observed in patients after endovideolaparoscopic surgery (abscesses, suture openings, ligature leaks, etc.).

The postoperative period consists of early activation of patients and restoration of intestinal function.

In videolaparoscopic adhesion, rinsing the abdomen on the background of FLA not only reduces the number of complications, but also helps patients to quickly restore physical activity.

The medical and social effectiveness of the treatment plan depends on the following. 1) reduces the length of hospital stay of patients by 1.36 times. 2) reduces the number of re-hospitalizations from 36.8% to 7.5%.

We came to the following conclusion from the observations. The use of FLA in videolaparoscopic adhesion plays a key role as a minimally invasive method in the early prevention of adhesions in the abdominal cavity; a clear view of the abdominal organs and help to identify adhesions and determine treatment tactics.

Based on our basic observations, we found that early prevention of intra- abdominal adhesions should be continued from the intraoperative period to the postoperative period.

Increasing the fibrinolytic activity of the blood helps FLA to reduce the amount of fibrinolytic in the blood. Analysis of conventional and minimally invasive treatment of acute adhesive bowel obstruction allows us to rework the established tactics in the prevention of adhesions in children.

A method similar to endovisual laparoscopic adhesiolysis provides prophylaxis of adhesions in the abdominal cavity in the early postoperative period.

The fact that the patient feels well in the early postoperative period shows that the patient's quality of life and cosmetic outcome are of great importance.

In the main group of patients receiving FLA in laparoscopic adhesionis, no postoperative wound purulence was observed in any of the patients with intraabdominal purulent-inflammatory opening of the wound sutures.

In the postoperative period, the length of hospital stay of patients is significantly reduced by 6.0 ± 0.5 days. Our observations showed that when laparoscopic adhesionis was performed with FLA, physical activity in patients increased approximately 3.5-fold in the postoperative period.

Significant damage to the parietal and visceral cornea in laparotomy is a process associated with its inflammation, which is prone to the development of acute intestinal adhesions.

The laparoscopic method drastically reduces such unpleasant processes. One of the key components of early prevention of adhesions is the use of intraoperative FLA in combination with low-trauma videolaparoscopic surgery. Thus, according to the results of our study, the use of videolaparoscopic adhesionis with anti-adhesion barrier FLA was successful in 92.7% of cases, conversion in 2 (4.9%) cases, traditional surgical treatment tactics of OBIT, in 1 case (2.4%) re-applied laparoscopic adhesionis.

It is divided into 3 phases based on the algorithm of treatment of OBIT in children and studies on early prevention of recurrence of the disease.

(preoperative, intraoperative, postoperative measures). Each phase is divided into phases

(Figure1).

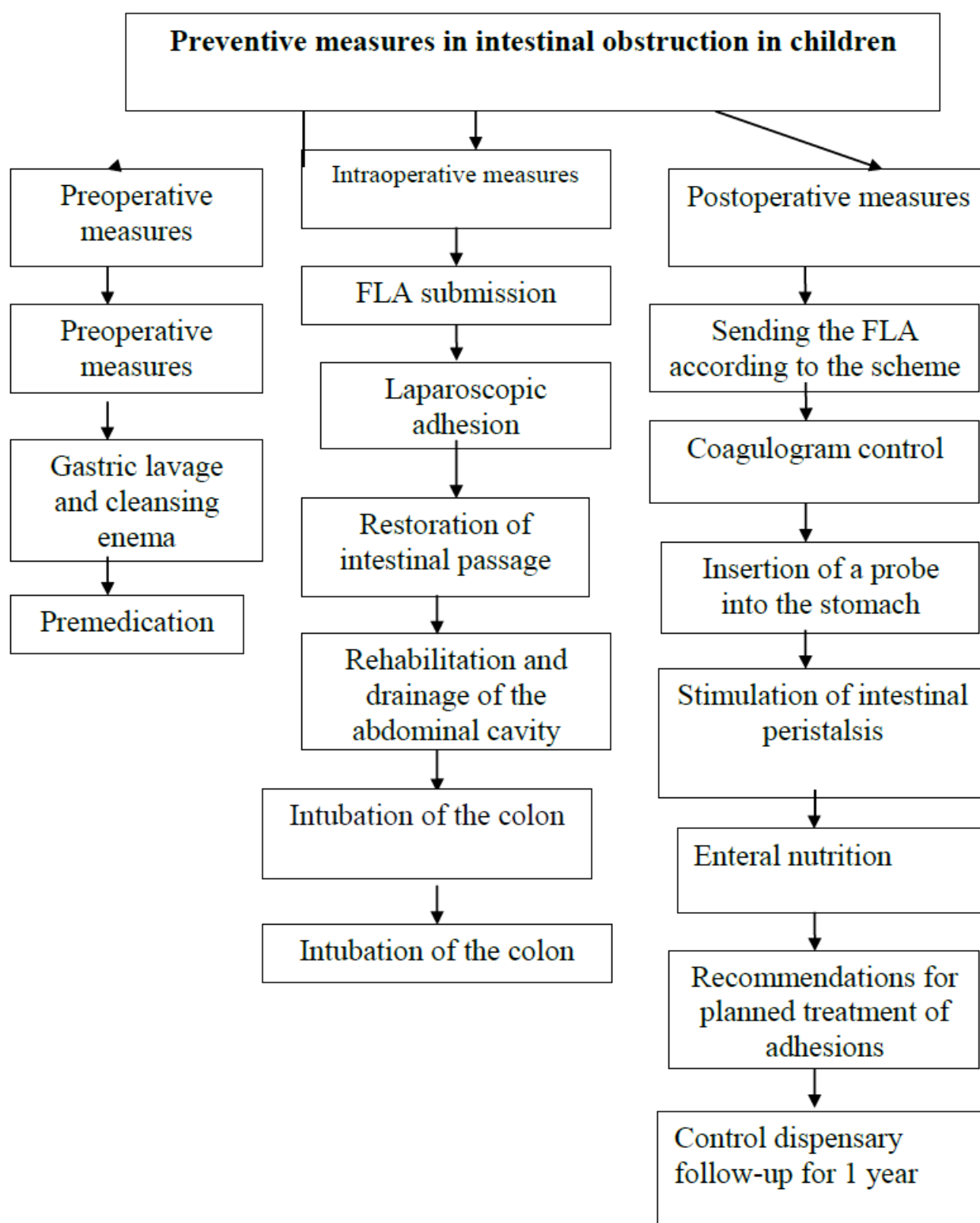


Figure 1. Algorithm for the care of patients with OBIT in preoperative, operative and postoperative periods.

The videolaparoscopic adhesion method minimizes surgical injury by allowing more tissue to be preserved than the traditional method, which cannot be achieved using traditional intervention techniques.

The described condition is then the actual early prophylaxis of the adhesion process.

Thus, the results of our study suggest that the concomitant use of anti-adhesion barrier FLA in combination with minimally invasive videolaparoscopic adhesionis can effectively combat the adhesion process in the abdominal cavity in the near postoperative period.

CONCLUSIONS:

1. One of the main etiological factors of the risk of developing adhesions and its complications is the persistence of traditional "open" operative adhesions due to inflammatory diseases of the abdomen and the lack of effective means of intraoperative, early prevention of adhesions in the abdomen.
2. It is necessary to take into account the concentration of fibrinogen and the activity of fibrinolysis, which play a key role in the pathogenesis of adhesions.
3. Rinsing the abdomen with FLA during laparoscopic adhesion reduction reduces fibrinogen concentrations and normalizes fibrinolysis, which is a reliable method in the postoperative and early prophylaxis of adhesions in children.
4. Laparoscopic adhesion reduction in OBIT reduces surgical trauma, reduces the risk of recurrence by 3.3 times, reduces complications, travel time, recovery of physical activity and bed rest by 1.6 times, improves the patient's quality of life and good cosmetic leaves fruit.

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