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EFFICACY OF LESS INVASIVE TECHNOLOGIES IN THE TREATMENT OF DIFFUSED PERITONITIS AT DIFFERENT AGES

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Abstract

This article presents the possibilities and experience of using videolaparoscopy technologies in the diagnosis and treatment of patients with disseminated peritonitis in children. In surgical practice, videolaparoscopy was used as a diagnostic method that allowed only visual assessment, which allowed assessing the condition of the abdominal cavity with minimal tissue damage.

The rapid development of videolaparoscopy is associated with the emergence of new videoendosurgical technologies. In acute surgical diseases of the abdominal cavity, videolaparoscopy allows you to reduce the number of unnecessary laparotomies, which is especially important for young patients and those with severe or other high-grade comorbidities.

Currently, many authors consider videolaparoscopic sanitation of the abdominal cavity as an alternative method of planned revision and sanitation. The accumulated clinical experience shows that videolaparoscopy has wide possibilities in the treatment of disseminated peritonitis. The development of a videolaparoscopic sanitation method is urgent, which, together with the elimination of the cause of disseminated peritonitis, allows you to abandon laparotomy. As a result of the use of operative videolaparoscopy, the duration of hospitalization of patients is significantly reduced. The authors note that the number of surgical complications has decreased, rehabilitation has accelerated, pain syndrome is quickly eliminated, and a good cosmetic effect has been achieved. This is due to the low invasiveness of videolaparoscopic procedures. However, the possibilities of endovideosurgery are limited by certain factors, which are difficult to predict in advance. Therefore, it is important to define the scope of clear indications and contraindications for the use of videolaparoscopic methods in this complex field, as well as to improve the methodology of practical application.

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Keywords: Video laparoscopy, children, peritonitis, videolaparoscopic resection, diagnosis and treatment of disseminated peritonitis.

Introduction

Despite the improvement of surgical treatment methods for peritonitis, which is currently widespread in children, and the widespread use of modern intensive care devices, mortality from this nosology remains high [1,6].

In this regard, in recent years, surgeons have focused on a deeper study of the pathogenesis of disseminated peritonitis, the development of effective methods of its diagnosis and treatment [1]. Currently, planned relaparotomy is mainly used in the treatment of disseminated peritonitis, and in rare cases, laparotomy is performed. These methods allow for effective sanitation of the abdominal cavity and control of the course of disseminated peritonitis [2, 3].

However, such methods are considered quite traumatic and can lead to increased stress, protein and electrolyte loss, decreased immune system activity, and a number of serious complications [5, 7].

Purpose of the Work

To determine the capabilities of the videolaparoscopy method in the diagnosis and treatment of widespread peritonitis.

In recent years, the rapid development of minimally invasive methods in the treatment of various surgical diseases has made it possible to widely use the videolaparoscopic sanitation method in disseminated peritonitis in clinical practice [8, 10].

History of development and application of videolaparoscopy

Although videolaparoscopy was initially used to perform diagnostic procedures in general hospitals, it was not until the mid-1980s that it was primarily considered an effective diagnostic method in abdominal surgery [4].

The use of this method in combination with other auxiliary methods (chromolaparoscopy, laparoscopic organ rheography, laparoscopic Doppler ultrasound, laparoscopic thermometry, luminescent laparoscopy, etc.) has significantly expanded the diagnostic capabilities [4, 9]. The rapid development of the videolaparoscopy method is associated with the emergence of new videolaparoscopy technologies and the possibility of transmitting a general image of the abdominal cavity to a monitor. The introduction of videolaparoscopy has made it possible to carry out coordinated actions of a surgical team consisting of several surgeons, which has made it possible to move from passive observation to active intervention.

In the 1990s, video-laparoscopic techniques were introduced into practice and were used in almost all areas of surgery, becoming a leading method in the treatment of certain diseases [2, 7].

Possibilities of using laparoscopy in widespread peritonitis q The issue of using videolaparoscopy in cases of acute surgical diseases of the abdominal cavity complicated by peritonitis has not yet been fully resolved. In the recent past, widespread peritonitis itself was

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considered an absolute contraindication to videolaparoscopy. This was primarily due to the lack of technical capabilities for performing such operations and the risk of spreading the inflammatory process to healthy departments. However, with the development of videolaparoscopy technology and the increase in experience in emergency videolaparoscopy, videolaparoscopy began to gradually enter the process of diagnosing and treating peritonitis. In previous years, videolaparoscopy was used to diagnose widespread peritonitis in patients with abdominal diseases and injuries of unclear etiology. For example, according to E.N. Maloman (1981), laparoscopy allowed to avoid unnecessary laparotomy in 95% of such patients. Experience with dynamic videolaparoscopy Since the early 1980s, dynamic laparoscopy has been used in the period after laparotomy for peritonitis. During the primary operation, the source of peritonitis is removed by the traditional method, and the abdominal cavity is lavaged and drained. If there is ileus (intestinal paralysis), nasintestinal intubation is also used. The patient's condition is assessed during the primary laparotomy and the need for dynamic videolaparoscopy interventions in the following days is determined.

The guidelines are the following factors: Duration of peritonitis is more than 12 hours;
Massive fibrin layers and adhesion; fibrinous-purulent exudate;
Impossibility of full recovery due to the patient's serious condition;
Visual control is necessary in cases of high risk of intra-abdominal complications.

Contraindications are the following factors: Viscero-visceral or viscero-parietal inflammatory adhesions; peritoneal reaction to inflammation; difficult-to-remove fibrin layers; high bacterial contamination (10^6 bacterial cells per 1 ml); lack of positive dynamics in videolaparoscopic sanitation sessions.

Features and effectiveness of dynamic videolaparoscopy:
One of the disadvantages of videolaparoscopy is that when bacterial contamination is high and fibrinous layers are widespread, the ability to adequately clean the abdominal cavity is limited. Also, in cases of intestinal paralysis, vision and movement through the laparoscope are limited. Nasointestinal intubation is not always possible. According to the authors, dynamic videolaparoscopy is used 6–12, 24 or 48 hours after surgery. In order to facilitate re-videolaparoscopy, in some cases, a special laparoscopic sleeve is inserted into the abdominal wall during laparotomy.

Tasks performed by this method:
Assessment of the dynamics of the infectious-inflammatory process;
Monitoring the effectiveness of treatment;
Separation of the processes of fusion in the abdominal cavity;
Removal of exudate and local lavage (lavage);
Monitoring and correcting the location of drains;
Obtaining material for bacteriological analysis.

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During videolaparoscopic sanitation of the abdominal cavity, additional methods of influence can also be used: washing with antiseptic solutions and ozone water. Number of re-sanitizations: usually 2-3 times, but can be increased to 7-8 times, depending on the need.

The effectiveness of this approach is important because, as a less traumatic and active method of rehabilitation, it has become the main method in some clinics for the uncomplicated recovery of patients with peritonitis.

Videolaparoscopy — as a way to eliminate the source of peritonitis d The next important step after endoscopic laparoscopy is the complete elimination of the source of peritonitis using the videolaparoscopic method. The first information about this method appeared against the background of reports on the use of videolaparoscopic sanitation after laparotomy and was met with great interest by surgeons.

This type of operation was first performed in our country by pediatric surgeons, and they are still the most experienced specialists in such interventions [6, 10. 12].

A.G. Krieger and B.K. According to Shurkalin (2009), the advantages of videolaparoscopic methods are as follows:

The ability to accurately determine the degree of peritonitis (visual control);

Low traumatic intervention;

Mainly, reduction in the number of wound (infectious) complications;

The possibility of early activation and rehabilitation of patients;

High cosmetic result; limitations of practice:

However, in some cases, the effectiveness of the videolaparoscopy method may be limited. According to the authors, such situations are associated with:

Severe bacterial contamination in the abdominal cavity and dense adhesion of fibrinous layers, limitation of surgical practice in the presence of intestinal paralysis, that is, the possibility of poor vision, the impossibility of performing nasointestinal decompression.

Brief summary: Thus, videolaparoscopy is important in that it can be used not only for sanitation, but also for eliminating the source of peritonitis. This approach reduces the need for laparotomy and facilitates the patient's recovery process.

Types of videolaparoscopic sanation and their classification

IS Malkov (2001) analyzed 103 videolaparoscopic sanitation experiments performed in 60 patients with widespread peritonitis and developed a practical working classification of videolaparoscopic sanitation methods [15].

According to the developed classification, the arts are divided into the following types:

1. Planned (programmed) performances:

It is performed 24–48 hours after the primary operation or previous rehabilitation.

2. Delayed performances:

In cases where it can be carried out only after 48 hours due to the serious condition of the patient.

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3. Urgent Sanitation:

When intra-abdominal complications develop after surgery, videolaparoscopy is used to quickly diagnose and determine treatment tactics (i.e., laparoscopic repair or relaparotomy is selected).

Types of rehabilitation depending on the execution:

- Contraperture sanation - the laparoscope is inserted from different places.
- Reoperative rehabilitation - the laparoscope is inserted through the previous laparotomy site, the top is re-opened and inserted.
- Sanitation with fistula is performed through a previously prepared channel (fistula).

According to the method of washing the abdominal cavity:

- Traditional sanitation is used through an irrigator-aspirator.
- Sanitation with the help of equipment is carried out using special automatic washing devices.

Indications and main use cases for laparoscopic resection

I.S. Malkov and co-authors (2001), based on their experience and literature review, set the following basic guidelines for laparoscopic repair [15]:

Basic Instructions:

Widespread purulent peritonitis- in the toxic or terminal stage, - clinically manifest with signs of multiple microbial contamination;

Postoperative intra-abdominal complications, including: - untreated peritonitis, - biliary discharge (from the liver and biliary tract), - retention of washing fluids in the abdominal cavity after peritoneal lavage.

Anastomotic failure and laparoscopy

It is known that one of the main operations performed urgently in case of widespread peritonitis is intestinal resection and entero-enteroanastomosis. However, after such operations, failure (separation) of anastomotic sutures occurs very often - according to some data, from 4.3% to 69%. The reason for this failure is the low chance of healing when the anastomosis is performed against the background of peritonitis. The overall mortality rate can reach 70% and this figure is not likely to decrease [8]. According to the experience of V.R. Bondarev et al. (2012): On the 4th day after surgery, dynamic laparoscopy was performed in 9 patients. In 8 of them, anastomotic failure was denied, in 1 it was confirmed. On the 6th day, additional laparoscopy was performed in 2 patients, during which another failure was detected. It was noted that peritonitis did not develop in patients with anastomotic failure. In the patient on the 4th day, the anastomotic sutures were restored; in the patient on the 6th day, the intestine was re-resected and a new anastomosis was performed; The state of microcirculation was taken into account when creating the new anastomosis.

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It can be concluded that in urgent casesdiagnostic dynamic laparoscopy after intestinal anastomoses: avoids unnecessary relaparotomies; helps in early detection of complications; reduces mortality;

Makes it possible to continue effective conservative treatment.

VM Buyanov and co-authors (1997) noted that postoperative peritonitis is one of the most serious complications of abdominal surgery, especially common after operations involving infections of internal organs.

Assessment of the level of endogenous intoxication; dynamic laparoscopy is recommended for early detection of pathology. Complete or partial elimination of the source of peritonitis; Intestinal intubation; Complete sanitation and drainage of the abdominal cavity.

If peritonitis is only local in nature and there are no signs of abdominal sepsis, and the patient's general condition is stable - re-suture of the anastomotic sutures, **reconstructive interventions**can be implemented [4].

Videolaparoscopic resection is an alternative to planned resections

Many authors consider video-laparoscopic sanitation as an alternative to the method of periodic cleaning of the abdominal cavity (revision and sanitation).

V.M. Sedov et al (2008) state that:

The low traumatism and high efficiency of laparoscopic sanitation prevent a number of complications in peritonitis (eventration, intestinal fistula formation, contamination of the surgical wound). This, in turn, reduces mortality and shortens the duration of hospitalization [14]. At the same time, the possibilities of endovideosurgery are limited by a number of complicating factors, which become clear only during surgery. Traumatic injuries in the abdominal cavity, at the time of separation of adhesions (fibrous adhesions); abscesses in the abdominal cavity;

intestinal paresis; or the impossibility of laparoscopic removal of organic pathology [13, 15]. Currently, there may be general and local contraindications for performing videolaparoscopy: General indications: severe condition of patients with heart, lung, liver and kidney failure. Local indications: Videolaparoscopy is ineffective in peritonitis for some reason; or there may be cases where the possibility of complete sanitation is limited. Such conditions should be identified before surgery and evaluated as contraindications [16].

According to F.N. Nazarov et al. (2013), videolaparoscopy technologies have expanded the possibilities of minimally invasive surgery, especially in liver injuries [17]. For example, the use of rapid videolaparoscopy has allowed to avoid unnecessary laparotomy in 18.6% of patients with abdominal injuries. This is of great importance for patients with severe combined injuries [13, 14]. Diagnostic videolaparoscopy allowed for a precise diagnosis and subsequent surgical planning in 22.3% of cases [11, 12]. RS Smith et al. (2007) performed therapeutic laparoscopy in 40.8% of cases of closed abdominal injuries, which reduced surgical risks and improved treatment outcomes [16].

According to A.P. Faller et al. (2007), the combined use of modern methods - ultrasonography and videolaparoscopy - is effective in monitoring infectious processes, timely detection of postoperative peritonitis and abscesses in the abdominal cavity. The use of videolaparoscopy in

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some cases allows avoiding repeated laparotomy in patients with suspected postoperative peritonitis. According to the authors' experience, in 36 out of 100 cases, complications could be corrected without additional trauma by videolaparoscopic sanitation or ultrasound-guided puncture [13].

Conclusion

In other words, the experience accumulated so far shows the wide possibilities of videolaparoscopic technologies in the diagnosis and treatment of disseminated peritonitis. The relevance of the problem of peritonitis treatment, conflicting information in the literature and the theoretical and practical importance of pre- and post-operative sanitation make us look for methods of continuous sanitation of the abdominal cavity in the postoperative period. Therefore, identification of indications and contraindications for the use of this method remains a key issue in this complex field. Improvement of videolaparoscopic repair methods is also an important direction of endovideosurgical treatment in disseminated peritonitis.

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