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RESULTS OF LAPAROSCOPY IN PATIENTS WITH ABDOMINAL INJURIES

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Abstract:

It should be taken into account that laparoscopy can be used to treat most patients with abdominal injuries associated with trauma. In patients with stable hemodynamics, laparoscopic surgery takes an average of 57 minutes. The operating time after laparoscopy is almost the same as with traditional surgery (108.1 minutes versus 103.0 minutes, respectively). The use of an algorithm for selecting patients for laparoscopic intervention reduces the time spent in the operating room and the overall length of hospital stay. In addition, laparoscopy significantly reduces the incidence of postoperative complications.

Keywords: *Closed abdominal trauma, laparoscopy.*

Introduction

Relevance. Modern human abdominal trauma often involves multiple and combined injuries, which leads to high mortality, reaching 58%. One of the main problems in the treatment of these victims is the complexity of diagnosis due to the fact that the injuries concern different areas of the body, and the clinical picture is not clear enough. 73.1% of cases of errors in diagnosis. Because of this, conducting an exploratory laparotomy in the early stages to prevent complications such as peritonitis or intra-abdominal bleeding has become a common tactical decision. However, there is a significant proportion of cases when laparotomy is performed unnecessarily: on average from 7 to 28.6% and in severe combined injuries from 50 to 80%. The condition of victims may worsen after such operations, especially in severe injuries. In some cases, the invasiveness of laparotomy is higher than the potential benefits. Thus, it is obvious that there is a need to revise the current standards of care for patients with abdominal trauma.

The aim of the study. Is to improve the results of diagnostics and surgical treatment of victims with closed abdominal trauma (BAT) by expanding and specifying the indications for the use of laparoscopy, taking into account the volume of free fluid in the abdominal cavity.

Material and methods. A total of 320 patients with blunt abdominal trauma whose hemodynamics were stabilized at the time of surgery were selected for retrospective analysis. The study included people aged 18 to 60 years with stable blood pressure upon admission and stabilized hemodynamics after preliminary anti-shock therapy.

Patients were divided into two groups depending on whether videolaparoscopic technology was used for diagnosis and treatment. 218 patients in the control group underwent wide laparotomy without laparoscopy, and 102 patients in the main group underwent surgical intervention using diagnostic laparoscopy.

The average age of patients was 33.3±11.4 years. As with all other types of mechanical injuries, among victims with PTSD, males significantly predominated - 133 (83.1%) versus 27 (16.9%) women. Due to the fact that laparoscopic interventions were primarily used in victims with questionable clinical and sonographic signs of hemoperitoneum, including as the so-called "safety laparoscopy" in patients with combined abdominal trauma, which was apparently reflected in the difference in the average BPsyst. (p=0.0029).

The frequency of intraoperative detection of significant intra-abdominal complications, clearly requiring open surgery with such extensive interventions as suturing of deep and extensive ruptures of parenchymatous organs, the wall of a hollow organ, resection or removal of an organ, was 43.8% (occurred in 70 victims) (Table 4). It is interesting to note that this figure in the control group of patients, a significant portion of whom underwent wide laparotomy due to the presence of sonographic signs of free fluid in the abdominal cavity with a volume of more than 500 ml (a contraindication to laparoscopy), was 62.4%.

Thus, at least in 37.6% of patients with laparoscopic laparotomy with stable hemodynamic parameters, abdominal surgical interventions are limited to maximum electrocoagulation of the bleeding vessel, sanitation and drainage of the abdominal cavity, or only revision of the abdominal organs. As is known, all these manipulations are easily performed using a standard set of laparoscopic instruments without the need for wide laparotomy, which in itself represents a significant additional injury to the injured organism.

The frequency of situations when, during the primary operation, injuries were detected that, by their nature and severity, could potentially be eliminated laparoscopically without any particular technical difficulties (44.4%), was even higher in the main group (n=51), and amounted to 58.8% (30 cases) (Table 4). In this group of patients, the conversion rate was 37.3% (19 patients), the reason for which was the need to perform splenectomy in 14 cases, suturing the wall of a hollow organ in 3 cases, and liver rupture ≥stage II according to Moore in 2 cases.

One of the important advantages of using laparoscopy in patients with GERD is the possibility of excluding cases of unnecessary laparotomy. In our observations in the group of primary wide laparotomy (n=109), in 2 (1.8%) cases no damage to the abdominal organs was detected intraoperatively (Table 4) requiring surgical procedures, which we regarded as “unnecessary laparotomy” (Table 5). We do not use this definition in relation to diagnostic laparoscopy, since after 3 (5.9%) cases of using exploratory endovideosurgery in patients with GERD, in none of them did we note the development of postoperative specific complications associated with this surgical procedure. That is, the use of laparoscopy in these cases allowed us to reliably exclude intra-abdominal damage without any negative consequences for patients.

Results and its discussion.

Taking into account the revealed relative safety of laparoscopy, we somewhat expanded the indications for its implementation. This approach, although it increased the conversion rate to 37.3% (see Table 4), was nevertheless not accompanied by iatrogenic intraoperative complications, and practically did not increase the average total time of the intervention (108.1±28.6 min for

laparoscopy with subsequent conversion versus 103.0±48.7 min in the primary wide laparotomy group, p=0.657) (Table 4.2). However, in those cases where it was possible to perform all therapeutic and diagnostic manipulations laparoscopically, without resorting to conversion, the average duration of the intervention was 57.0±40.8 min.

The desire of some of our laparoscopic surgeons to expand the indications for the use of laparoscopy even in patients with a volume of free fluid in the abdominal cavity of more than 500 ml, especially in patients with late admission (more than 24 hours after the injury) provided that their hemodynamic parameters remain stable, was reflected in the indicator "total blood loss" - in the group of laparoscopic interventions without conversion (n = 32), the average volume of blood in the abdominal cavity was 837 ± 681.3 ml, which significantly exceeds the limit of 500 ml established by us (Table 5). However, at the current stage and level of proficiency in laparoscopic technique of most of our surgeons, we consider it appropriate to limit the indications for the use of laparoscopy in patients with GERD to a volume of free fluid in the abdominal cavity of no more than 500 ml. Another confirmation of the advisability of such a limitation of indications for laparoscopy is, in our opinion, the average volume of hemoperitoneum detected in victims who had to resort to conversion of laparoscopic intervention, amounting to 902.4 ± 658.5 ml, which was approximately equal to a similar indicator in the control group - 1141.7 ± 676.1 ml ($p > 0.05$). Moreover, compliance with the "algorithm for choosing the tactics of surgical treatment of ZTZ based on ultrasound assessment of the volume of free fluid in the abdominal cavity" developed by us when selecting patients for laparoscopy or primary laparotomy made it possible to minimize the frequency of unnecessary laparotomy (2 (1.8%) cases out of 109 laparotomies) not only due to the widespread use of diagnostic laparoscopy, but also due to the prognostic effectiveness of the criterion we chose "< or > 500 ml".

The diagnostic efficiency of the developed scale for calculating the volume of free fluid in the abdominal cavity using ultrasound, which allowed us to predict the presence of a milder or more severe intra-abdominal injury in patients with PTD before surgery, was indirectly confirmed by the number of situations requiring blood transfusion. Thus, with a volume of free fluid in the abdominal cavity of up to 500 ml, we predicted a milder injury to internal organs and resorted to primary laparoscopy. In this group of patients (n = 51), the frequency of blood transfusion in total was 10 (19.6%) cases (3 cases in the laparoscopy subgroup and 7 cases in the laparoscopy + conversion subgroup), whereas in the control group of patients undergoing primary laparotomy (n = 109), red blood cell transfusion was resorted to in 51 (46.8) patients.

With comparable initial hemodynamic parameters (p=0.0029), overall injury severity according to the RTS scale (p=0.2301) and the frequency of combined injuries to other anatomical areas (p=0.850) (see Table 1), minimally invasive and low-traumatic laparoscopic interventions combined with a lower severity of intraoperatively detected intra-abdominal injuries in the main group of patients contributed to a significant reduction in the duration of stay in the intensive care unit from 2.8±1.1 to 1.8±1.0 days, inpatient treatment from 8.7±3.4 to 5.3±2.9 days, and a noticeable decrease in the frequency of postoperative complications from 11.9 to 3.1% (p=0.144). Not a single postoperative complication was associated with intra-abdominal injury or pathology that was not diagnosed during surgery.

Conclusions.

In 62.8% of patients with pelvic edema, intraoperative damage is detected that, by its nature and severity, can potentially be eliminated laparoscopically without any particular technical difficulties using routinely used endosurgical instruments, which justifies the advisability of expanding the indications for laparoscopy in abdominal trauma.

The average duration of laparoscopic procedures for laparotomy in patients with stable hemodynamics is 57.0±40.8 min. Laparoscopy with subsequent conversion practically does not

increase the average duration of the intervention compared to primary wide laparotomy (108.1±28.6 vs. 103.0±48.7 min, p=0.657). Selection of patients for laparoscopic interventions using the proposed algorithm, minimally invasiveness and low trauma of this surgical technique contribute to a reliable reduction in the duration of stay in the intensive care unit from 2.8±1.1 to 1.8±1.0 days, inpatient treatment from 8.7±3.4 to 5.3±2.9 days, a noticeable decrease in the incidence of postoperative complications from 11.9 to 3.1% (p=0.144).

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