METHODS OF PREVENTION OF POSTOPERATIVE PERITONITIS
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Abstract. The aim of the study. To explore the causes and improve methods of prevention of postoperative peritonitis.

Materials and methods. From 2012 to 2022 in the surgical department of municipal non-profit enterprise “Regional clinical hospital of the Ivano-Frankivsk Regional Council” were performed 10687 surgical interventions for various diseases and injuries of organs of the abdominal cavity. In 244 (2.3%) patients the postoperative period was complicated by the development of peritonitis, which led to repeated surgical intervention. We analyzed the results of treatment of this category of patients aged 20 to 84 years. Local peritonitis was diagnosed in 125 (51.2%) of them, diffuse peritonitis in 119 (48.8%).

Research results. For today approaches to methods of surgical prevention of postoperative peritonitis are quite uninformative, due to the fact that in most cases the main rules of asepsis and antiseptics and appropriate surgical tactics are followed in combination with conservative intensive infusion therapy and antibacterial drugs.

Complete removal of pathological contents from the abdominal cavity is a mandatory stage of surgery for postoperative peritonitis and one of the key factors in preventing such complications in the postoperative period as septic shock and multiple organ failure. Based on the information from the analysis of the literature, as well as on our own observations, we have developed a method of lavage of the abdominal cavity, which affects various pathogenetic factors in postoperative peritonitis.

Conclusion. Fundamental meaning in the prevention of the development of postoperative peritonitis are the timely execution and adequate volume of the operation, the maximum evacuation of the pathological contents with subsequent lavage of the abdominal cavity by the proposed method, careful handling of the organs of the abdominal cavity (suture of questionable areas and injuries of the intestine), careful hemostasis, active-passive drainage of not only loose areas of the abdominal cavity, but also of anastomosis and abscess cavities.

Key words: postoperative peritonitis; prevention methods.

Statement of the task and analysis of the latest research. Nowadays the problem of postoperative peritonitis continues to be one of the most important issues of practical surgery, because, despite all recent achievements, it is the direct cause of death of 50-86% of patients after operations on abdominal organs. Postoperative peritonitis is the most common cause of early relaparotomy, accounting for 35-56% of all intra-abdominal complications that occur after abdominal operations [2,6,9].

Postoperative peritonitis can occur without abdominal sepsis, with abdominal sepsis and with septic shock [3]. Even after surgical removal of the focus of infection in the abdominal cavity and the use of massive antibacterial therapy, 50% of patients with abdominal sepsis develop infectious-toxic shock or severe multorgan dysfunction, which in 50-90% has fatal consequences [1, 8].

In modern conditions, widespread forms of purulent peritonitis as a complication of destructive processes in the abdominal cavity are inseparable from the problems of abdominal sepsis. Features of abdominal sepsis in a surgical patient are determined by: the presence of multiple or residual foci of infection; rapid inclusion of mechanisms of endogenous translocation of microorganisms and toxins; rapid progression of infectious-toxic shock and multiple organ failure; presence of polymicrobial infection; high mortality rate; the need for strict adherence to the basic principles of therapy (adequate surgical sanitation, optimized antimicrobial therapy, standardized IT [4, 10]). The choice of optimal medical and surgical tactics is difficult and ambiguous. The principle of radical surgical treatment is based on complete adequate and early elimination or delineation of all the main, additional and potential sources of endogenous intoxication of both microbial and dysmetabolic origin [11, 13]. At the next stage of operative treatment, peritoneal lavage and sanitation of the abdominal cavity provides, although not in all situations, a sufficient decontamination and detoxification effect. Treatment of residual and prevention of re-infection of the abdominal cavity is achieved by reasoned selection of programmed revision and sanitation of the abdominal cavity [5, 7, 12].

The aim of the study. To explore the causes and improve methods of prevention of postoperative peritonitis.

Materials and methods.
From 2012 to 2022, 10687 surgical interventions for various diseases and injuries of abdominal organs were performed in the department of surgery of the municipal non-profit enterprise Regional clinical hospital of the Ivano-Frankivsk Regional Council. In 244 (2.3%) patients, the postoperative period was complicated by the development of peritonitis, which led to repeated surgical intervention. We analyzed the results of treatment of this category of patients aged 20 to 84 years.
Local peritonitis was diagnosed in 125 (51.2%) of them, diffuse peritonitis in 119 (48.8%).

Research results

The reasons that have a significant influence on the implementation of protective mechanisms at the local and systemic level are the time of postoperative peritonitis, the applied treatment, the volume and bacteriological content of the peritoneal exudate and the location of the inflammatory focus. The main success in preventing the development of postoperative peritonitis can be seen in an adequate approach to treatment. Therefore, in our opinion, the decisive influence on the prevention of the development of postoperative peritonitis has:

1. the volume of surgery adequate to the cause of postoperative peritonitis;
2. manual separation of the healthy peritoneum from the cause of postoperative peritonitis;
3. evacuation of pathological contents with an electric suction device;
4. thorough peritoneal lavage;
5. careful handling of abdominal organs (prevention and diagnosis of deserosis during operations, meticulous removal of fibrinous plaque);
6. intraoperative assessment of wall viability;
7. a thorough inspection of the seams on the applied anastomoses, drainage of their places;
8. a thorough examination of the loose parts of the abdominal cavity for the content of pathological exudate;
9. sufficient drainage of parts of the abdominal cavity where pathological contents are present;
10. adequate control of bleeding vessels during suturing of the surgical wound;
11. analysis / establishment of indications for performing relaparotomy;
12. minimization of the duration and number of relaparotomy;
13. intestinal intubation.
14. minimally invasive technologies for diagnosing an infectious source (under ultrasound control, drainage with a stylet-catheter, laparoscopy).

We are sure that during each relaparotomy, the abdominal cavity should be cleaned and the postoperative wound treated with antiseptics.

Approaches to methods of surgical prevention of postoperative peritonitis, as of today, are quite uninformative, due to the fact that in most cases the main rules of asepsis and antiseptics and appropriate surgical tactics are followed in combination with conservative intensive infusion therapy and antibacterial drugs.

Complete removal of pathological contents from the abdominal cavity is a mandatory stage of surgery for postoperative peritonitis and one of the key factors in preventing such complications in the postoperative period as septic shock and multiple organ failure. The methods of lavage of the abdominal cavity should be based on the data of the physiology of the peritoneum, the antimicrobial abilities of antiseptic solutions and the effect on the release of toxins by pathogenic microorganisms, etc. Based on the information from the analysis of the literature, as well as on our own observations, we have developed a method of sanitation of the abdominal cavity, which affects various pathogenetic factors in postoperative peritonitis.

The short-term and limited antimicrobial effect of dekasan only on the surface of the peritoneum due to the rapid washout from the abdominal cavity, the short time of the abdominal cavity sanitation and the rapid inactivation by peritoneal exudate, which increases the number of postoperative complications and the duration of treatment, is a disadvantage of the known methods of abdominal cavity sanitation. The method of rehabilitation of postoperative peritonitis was carried out as follows: during relaparotomy, after mechanical cleaning of the abdominal cavity from fecal masses, bile, blood clots, fibrin layers, the abdominal cavity is washed twice with 2-3 liters of 0.02% decamethoxine solution at a temperature of 30-35°C. After removing the remains of the drug from the abdominal cavity, pour 2 liters of Extranil peritoneal dialysis solution at a temperature of 370°C, the active substance of which is icodextrin, not glucose, that is, it is not a nutrient medium for microorganisms, but has an antimicrobial effect due to hyperosmolality and the effect on the peritoneum, which increases its adsorption properties. After that, the abdominal cavity is drained from four points with polyvinyl chloride tubes, which are intimately fixed to the skin and overlapped for 6 hours.

Therefore, the use of the proposed method of surgical treatment made it possible to significantly increase the efficiency of the sanitation of the abdominal cavity, reduce the concentration of its bacterial contamination and the probability of relapses in the postoperative period. The dynamics of indicators of endogenous intoxication with different methods of treatment is shown in table. 1.

The nature and regularity of biochemical changes in the body of a patient with postoperative peritonitis as the purulent-septic surgery progresses made it possible to better understand and predict the course and features of complex intensive treatment of this pathology. Indicators of each of the involved systems are highly variable depending on the severity of the initial condition of the patient and are usually difficult to correlate with each other.

In the picture of the typical course of postoperative peritonitis, the balancing of the levels of C-reactive protein and procalcitonin can be traced depending on the nature and stage of postoperative peritonitis. The duration and success of treatment of postoperative peritonitis with abdominal sepsis consists in the staged provision of high-quality surgical care, and its dependence on the predominance of pro-inflammatory and then anti-inflammatory indicators when overcoming the infectious process. However, such an inverse proportion is not always observed. As of today, such approaches continue to change, but their results are currently not only unconvincing, but also unpredictable. Among the factors...
of this are significant changes in norms even within the boundaries of the population being studied.

The leading component in postoperative peritonitis is multiple organ failure, therefore we offer the earliest possible diagnosis and treatment of organ failure, which is crucial in preventing the development of abdominal sepsis. The decisive effect is not only surgical treatment aimed at eliminating the cause of postoperative peritonitis, but also correction of disorders of the respiratory system and violations of the water-electrolyte balance, which are characteristic of patients with postoperative peritonitis. Replenishment of blood loss and full intravenous infusion therapy are important in the treatment of patients with postoperative peritonitis.

For the optimal choice of antibacterial therapy in order to prevent the development of postoperative peritonitis with abdominal sepsis and in the future for the choice of treatment, it is worth using the initial de-escalation treatment, according to the results of our research - carbapenems. We recommend that such treatment be included in the treatment protocols for patients with postoperative peritonitis with multiple organ failure. Prophylactic antifungal agents must be used depending on the indications, according to the patient’s condition. For the most positive effect of treatment, it is necessary to develop these treatment schemes based on constantly updated microbiological passports of surgical departments,

### Discussion

After operations for a number of diseases of the abdominal organs in patients is developing postoperative peritonitis. High lethality and unsatisfactory treatment efficiency make it necessary to develop new methods of treatment of postoperative peritonitis (Kirkpatrick AW et al, 2018). The clinic believes that for patients with postoperative peritonitis, the most effective and main method of treatment is surgery (emergency surgery), which includes, among other things, sanitation of the abdominal cavity. If you note the physiological features of the peritoneum (its area is more than 2 square meters, the construction of the mesothelium, there are “blind” pockets, the presence of propulsive activity of the intestine, the possibility of formation of fibrin and adhesions), full absorption of both the contents of the intestine and the contents of the abdominal cavity is obtained always succeeds.

Factors of fundamental importance in the prevention of the development of postoperative peritonitis are such factors as adequate volume of the operation, maximum evacuation of the pathological contents with subsequent sanitation of the abdominal cavity by the proposed method, careful handling of the organs of the abdominal cavity (suture of questionable injuries of the intestine), careful hemostasis, active-passive drainage of not only loose areas of the abdominal cavity, but also of anastomosis and abscess cavities (Sartelli M, et al, 2019).

### Conclusion

Fundamental importance in the prevention of the development of postoperative peritonitis have the timely execution and adequate volume of the operation, the maximum evacuation of the pathological contents with subsequent sanitation of the abdominal cavity by the proposed method, careful handling of the organs of the abdominal cavity (suture of questionable areas and injuries of the intestine), careful hemostasis, active-passive drainage of not only loose areas of the abdominal cavity, but also of anastomosis and abscess cavities.

Ethical standards: this study was carried out in accordance with ethical standards. All patients participating in the study gave informed consent.

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### References


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