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Prevention of Complications in the Postoperative Period When Treating Ventral Hernia

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Abstract: The use of synthetic materials for hernial orifice repair in patients with postoperative ventral hernias (POVH) has reduced the incidence of wound complications. However, the success of surgical treatment of patients with POVH largely depends on complete preparation for surgery, the choice of the optimal method of alloplasty and rational management of the patient in the postoperative period. An analysis of the results of surgical treatment of 143 patients with POVH for the period 2018-2022, operated on at the regional multidisciplinary medical center (RMMC), was carried out. For plastic surgery of the hernial orifice, a polypropylene mesh implant "Paha" (Turkey) was used. In 65 (45.4%) patients, supraponeurotic (on1au) plastic surgery was performed, and in 78 (54.5%), sublay type plastic surgery was used. In the early postoperative period, general complications occurred in 7 (4.8%) patients, wound complications - in 15 (10.5%) patients, mortality was 0.69%. To improve the results of surgical treatment of patients with POVH, a number of recommendations should be followed. In the preoperative period, it is useful to conduct a comprehensive examination of patients with the development of an individual program for the prevention of wound, thromboembolic and pulmonary complications.

Key words: postoperative ventral hernia, polypropylene mesh implant, prevention of complications..

I. Introduction

Currently, there is no doubt about the advisability of using additional materials in the surgical treatment of patients with postoperative ventral hernias (POVH). Over the past 30 years, methods of prosthetic repair of hernia orifices using synthetic mesh prostheses have become most widespread. The use of these techniques allowed for a relatively low incidence of wound complications (3.5-3.9%). At the same time, it has been established that incorrect selection of patients, inadequate preoperative preparation, technical errors during surgery and errors in patient management in the postoperative period can lead to the development of complications in the early postoperative period in patients with POVH.

Purpose of the work: to determine the main methods for preventing complications in the early postoperative period after prosthetic plastic surgery with a polypropylene mesh implant. The work was carried out in the clinic of faculty and hospital surgery of the Bukhara State Medical Institute (BukhMI) on the basis of the regional multidisciplinary medical center in Bukhara in the period 2018-2022.

II. Literature review

During this period of time, prosthetic operations for POVH were performed in 143 patients (average age of patients - 55.05 ± 1.36 years). Among the patients, there were 102 (71.3%) women and 41 (28.6%) men. According to the size of the hernial protrusion, according to the classification proposed by the European Herniology Society (EHS), adopted at the XXI International Congress of Herniologists in Madrid (1999), patients with small (W1) and medium (W2) POVH predominated (Table 1).

For plastic surgery of the hernial orifice, a polypropylene mesh implant from Paha (Turkey) was used. At the same time, in 65 (45.4%) patients, onlay type plastic surgery was performed, and in 78 (54.5%) the mesh implant was placed in the sublay position. In the early postoperative period, wound complications were noted in 15 (10.5%) patients (Table 2).

General complications after surgery occurred in 7 (4.8%) patients with POIG. 3 patients developed early adhesive intestinal obstruction, which was resolved conservatively. 2 patients had acute tracheobronchitis and in 2 cases phlebothrombosis of the deep veins of the lower extremities occurred.

Table 1

Distribution of patients with postoperative ventral hernias according to the size of the hernial protrusion (n=143)

Dimensions of hernias	**Number of patients**	
	abc.	*%*
W1 (small) - < 4 cm	62	43,3
W2 (medium) - ≥4-10 cm	57	39,9
W3 (large) - ≥10 cm	24	16,8
Total	143	100

table 2

The structure of local (wound) complications in patients with postoperative ventral hernias after alloplasty

Complication	**Number of patients, abs.**	**Complication rate, %**
Seroma wound	7	4,89
Wound hematoma	2	1,39
Lymphorrhea	1	0,69
Necrosis of the wound edges	1	0,69
Wound infiltration	3	2,09
Wound suppuration	1	0,69
Total	15	10,5

A lethal outcome in the early postoperative period was observed in 1 (0.69%) patient, the cause of death of which was pulmonary embolism (PE).

III. Analysis

When analyzing the results of treatment for POVH, it was established that the prevention of complications of alloprosthetics should begin at the preoperative stage.

Comprehensive preoperative preparation is aimed at creating favorable conditions for performing operations, preventing a significant increase in intra-abdominal pressure and associated complications in the early postoperative period. Assessment of pulmonary function allows one to predict the risk of developing high intra-abdominal pressure during surgery. In the case of a decompensated condition (VC less than 60%), special preparation is required. It includes the use of a bandage in combination with active breathing exercises and comprehensive physical therapy.

According to the literature, there is a significant increase in the frequency of wound complications of ventral hernias with greater body weight of the patient. According to the results of our study, it was revealed that the average body mass index in patients with POVH was 32 ± 0.62 kg/m^2. Excess body weight was observed in 82.6% of patients with POVH. One of the tasks of the preoperative period is to reduce the patient's body weight. For this purpose, patients were trained on an outpatient basis together with a nutritionist.

The development of wound complications after alloprosthetics in patients with POVH began in the preoperative period. In the presence of pathological changes (diaper rash, excoriation of the skin), preparation was carried out from 5 days to 2 weeks.

The anterior abdominal wall is treated daily with an antiseptic solution, and physiotherapy is prescribed. According to many authors, antibiotic prophylaxis significantly reduces the incidence of suppuration after alloplasty. In our clinic, it is carried out according to the following scheme: 30-40 minutes before the operation, amoxiclav is administered - 1.2 g intravenously (i.v.).

The greatest danger to the lives of patients is pulmonary embolism, as well as abdominal compartment syndrome; mortality can reach up to 10% [3]. Prevention of thromboembolic complications begins immediately before surgery. It includes elastic compression of the lower extremities and anticoagulant therapy.

IV. Discussion

Elastic compression must be performed in all patients with POVH before transport to the operating room until the patient is fully activated in the postoperative period. Low molecular weight heparin (Fraxiparin) was used for specific prophylaxis. The dosage depended on body weight: up to 50 kg - 0.2 ml subcutaneously, 50 - 69 kg - 0.3 ml, more than 70 kg - 0.4 ml once. In the group of patients, we studied, there was one death as a result of pulmonary embolism. This patient had a high risk of thromboembolic complications due to the presence of obesity of III-IV-degree, large POVH, and varicose veins of the lower extremities. Preventive measures were carried out in the generally accepted manner.

Despite this, death occurred. It is likely that in this category of patients it is necessary to more carefully resolve the issue in favor of surgery and in some cases, one should limit oneself to conservative methods of treatment. To predict the development of the syndrome of increased intra-abdominal pressure, it is currently recommended to perform X-ray computer hernia-abdominometry. The technique allows you to assess the condition of the abdominal wall, determine the volume of the abdominal cavity and hernial protrusion, and plan the method of upcoming plastic surgery.

The intraoperative stage of preventing early postoperative complications is the most important and determines the success of the operation, as well as the patient's quality of life. Often, POVH is combined with another pathology of the anterior abdominal wall, requiring surgical correction. Thus, in 8 (5.6%) patients, POVH was combined with diastasis of the rectus abdominis muscles, and in 23 (16%) - with a saggy abdomen. Elimination of diastasis was carried out by applying invaginating sutures to the sheaths of the rectus abdominis muscles using the Champion method with simultaneous implantation of a mesh prosthesis under the aponeurosis. In the presence of a sagging abdomen, abdominoplasty was performed.

The question of the need to drain the surgical wound is debatable. Some surgeons question the need

for wound drainage after alloplasty and consider it one of the factors that contributes to its suppuration.

We approach wound drainage in a differentiated manner. When performing onlay plastic surgery, we must drain the wound for a period of no more than 4-5 days. During sublay plastic surgery in patients with small and medium-sized hernias, we refrain from installing drains; we install them only in obese patients and with extensive hernias.

Management of the early postoperative period also affects treatment results. After alloprosthetics in patients with large and giant hernias, prolonged epidural analgesia is used, which is an effective method for the prevention of intestinal paresis. At the same time, the pain syndrome is successfully relieved, which contributes to earlier activation of the patient. Ultrasound of the postoperative wound plays an important role in the diagnosis and prevention of wound complications. If fluid accumulation exceeds 20 mm, seroma puncture is performed under ultrasound navigation.

The closed method of wound management avoided the high incidence of purulent complications, which amounted to 0.69%.

V. Conclusion

1. Thus, to improve the results of surgical treatment of POVH using mesh grafting, it is necessary to follow a number of recommendations.
2. In patients with POVH, a comprehensive examination should be carried out in the preoperative period to identify concomitant diseases and correct dysfunctions of organs, systems and homeostasis indicators.
3. In patients with a high surgical risk due to the likelihood of dysfunction of vital organs and systems, thromboembolic complications and the development of compartment syndrome, it is advisable to limit oneself to conservative treatment (wearing a bandage).
4. All patients with POVH need to be prevented from thromboembolic complications both before surgery and in the early postoperative period.
5. In the presence of abdominal diseases that require surgical correction, it is advisable to perform a simultaneous operation with the choice of optimal access.
6. The issue of drainage of the surgical area should be approached in a differentiated manner. It is advisable to install vacuum aspiration systems for drainage in cases of significant detachment of subcutaneous tissue. The drainage time should be short (within 4-5 days).
7. In the presence of fluid formations, the optimal method of treatment is a closed method of treatment - puncture under ultrasound navigation.

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