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Enhancing postoperative care to reduce complications in ventral hernia surgery

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ABSTRACT

The use of synthetic materials for hernioplasty in patients with postoperative ventral hernias (PVH) helps reduce the incidence of wound complications. However, the success of PVH surgical treatment depends on thorough preoperative preparation, selecting the optimal alloplasty method, and effective postoperative patient management.

An analysis of the surgical treatment outcomes for 143 PVH patients operated on between 2018 and 2022 at the Bukhara Regional Multidisciplinary Medical Center was conducted. Polypropylene mesh implants produced by "Paha" (Turkey) were used for hernioplasty. Of these patients, 65 (45.4%) underwent onlay plasty, while 78 (54.5%) received sublay plasty. In the early postoperative period, general complications were noted in 7 patients (4.8%), wound complications in 15 patients (10.5%), and the mortality rate was 0.69%.

To improve surgical outcomes for PVH patients, specific recommendations should be followed. A comprehensive preoperative examination, combined with an individualized program to prevent wound, thromboembolic, and pulmonary complications, can be beneficial.

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Ventral chirishlarni davolashda asorlarni kamaytirish uchun operatsiyadan keyingi davolashni optimallashtirish

Kalit so‘zlar:
operatsiyadan keyingi ventral chirishlar,
polipropilen torli implantat,
asorlanishlarning oldini olish,
chirishning qaytalanishi.

ANNOTATSIYA

Operatsiyadan keyingi ventral chirishlari (PVG) bo‘lgan bemorlarda gernioplastika uchun sintetik materiallardan foydalanish jarohat asorlari jadalligini kamaytirish imkonini beradi. Biroq, xirurgik davolashning muvaffaqiyati operatsiyaga to‘g‘ri tayyorlanishga, alloplastikaning optimal usulini tanlashga va bemorni operatsiyadan keyingi davrda samarali yuritishga bog‘liq bo‘lmaydi.

2018–2022-yillar davrida Buxoro viloyati ko‘p tarmoqli tibbiyot markazida amalga oshirilgan 143 nafar bemorni xirurgik davolash natijalari tahlil qilindi. Gernioplastika uchun «Paha» (Turkiya) ishlab chiqarilgan polipropilen torli implantlardan foydalanilgan. Bemorlarda 65 (45,4%) onlay plastikasi, 78 (54,5%) bemorlarda sublay plastikasi bajarildi. Erta operatsiyadan keyingi davrda 7 (4,8%) bemorda umumiy asorlar, jarohat asorlari 15 (10,5%) da ko‘rsatilgan, o‘lim hajmi 0,69% ni tashkil etgan.

Bemorlarni xirurgik davolash natijalarini yaxshilash uchun ayrim tavsiyalarga mos bo‘lishi kerak. Operatsion oldingi davrda jarohat, tromboembolik va engil asorlarning oldini olish bo‘yicha yakka tartibdagi dasturni tuzgan holda bemorlarni kompleks tekshiruvdan o‘tkazish foydali bo‘lishi mumkin.

Оптимизация послеоперационного лечения для минимизации осложнений при лечении вентральных грыж

Ключевые слова:
послеоперационные вентральные грыжи,
полипропиленовый сетчатый имплантат,
профилактика осложнений,
рецидив грыжи.

АННОТАЦИЯ

Использование синтетических материалов для герниопластики у пациентов с послеоперационными вентральными грыжами (ПВГ) позволяет снизить частоту раневых осложнений. Однако успех хирургического лечения ПВГ зависит от правильной подготовки к операции, выбора оптимального метода аллопластики и эффективного ведения пациента в послеоперационном периоде.

Проанализированы результаты хирургического лечения 143 пациентов с ПВГ, прооперированных в период 2018–2022 гг. в Бухарском областном многопрофильном медицинском центре. Для герниопластики использовались полипропиленовые сетчатые имплантаты производства "Paha" (Турция). У 65 (45,4%) пациентов была выполнена пластика onlay, у 78 (54,5%) пациентов – пластика sublay. В раннем послеоперационном периоде общие осложнения отмечены у 7 (4,8%) пациентов, раневые осложнения – у 15 (10,5%), летальность составила 0,69%.

Для улучшения результатов хирургического лечения больных с ПВГ необходимо придерживаться некоторых рекомендаций. В предоперационном периоде полезным может быть комплексное обследование пациентов с составлением индивидуальной программы профилактики раневых, тромбоэмболических и легочных осложнений.

INTRODUCTION

Currently, there is no doubt about the expediency of using additional materials in the surgical treatment of patients with postoperative ventral hernias (POVH). Over the last 30 years, the methods of prosthetic plasty of hernia gates using synthetic mesh prostheses have become the most widespread. The use of these techniques allowed for a relatively low incidence of wound complications (3.5-3.9%) [6].

At the same time, it has been established that incorrect selection of patients, inadequate preoperative preparation, technical errors during surgery and errors of patient management in the postoperative period can lead to the development of complications in the early postoperative period in patients with POVH.

The aim of the work: is to determine the main methods of complications prevention in the early postoperative period after prosthetic plasty with polypropylene mesh implant. The work was performed in the clinic of faculty and hospital surgery of Bukhara State Medical Institute (BukhMI) on the basis of the regional multidisciplinary medical center of Bukhara in the period 2018-2022.

MATERIAL AND METHODS

During this time period, prosthetic surgeries for POVH were performed on 143 patients (mean 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 hernia protrusion size according to the classification proposed by the European Society of Herniology (EHS), adopted at the XXI International Congress of Herniologists in Madrid (1999), patients with small (W1) and medium (W2) POVGs prevailed (Table 1).

The polypropylene mesh implant of the "Paha" company (Turkey) was used for hernia gate plasty. In 65 (45,4%) patients onlay plastic surgery was performed, and in 78 (54,5%) patients 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 postoperative complications occurred in 7 (4.8%) patients with POVH. 3 patients developed early adhesive intestinal obstruction, which was resolved conservatively. 2 patients had acute tracheobronchitis and in 2 cases phlebothrombosis of deep veins of the lower limbs occurred.

Table 1

Distribution of patients with postoperative ventral hernias by size of hernial protrusion (*n*=143)

Hernia size	Number of patients	
	abs.	%
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

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

Complication	Number of patients, abs.	Frequency of complications, %
Wound seroma	7	4,89
Wound hematoma	2	1,39
Lymphorrhea	1	0,69
Wound margin necrosis	1	0,69
Wound infiltrate	3	2,09
Wound suppuration	1	0,69
Total	15	10,5

Fatal outcome in the early postoperative period was observed in 1 (0.69%) patient whose cause of death was pulmonary embolism (PTE).

RESULTS AND DISCUSSION

When analyzing the results of POVH treatment it was established that the prevention of alloprosthetic complications should start at the preoperative stage. Complex preoperative preparation is aimed at creating favorable conditions for performing operations, preventing a significant increase in intra-abdominal pressure and related complications in the early postoperative period. Assessment of external respiratory function allows predicting the risk of developing high intra-abdominal pressure during surgery. In the case of a decompensated state (GIEL less than 60%), special preparation is necessary. It includes the use of a bandage in combination with active breathing exercises and complex therapeutic exercises.

According to literature data, there is a reliable increase in the incidence of wound complications of ventral hernias with a higher body weight of the patient [8]. According to the results of our study, the average body mass index in patients with POVH was 32 ± 0.62 kg/m2. Overweight 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, the patients were trained in outpatient conditions together with a nutritionist.

The development of wound complications after alloprosthesis in patients with POVH was started in the preoperative period. In the presence of pathologic changes (diaper rash, skin excoriation) the preparation was carried out from 5 days to 2 weeks. The anterior abdominal wall was treated daily with an antiseptic solution, physical therapy was prescribed. According to many authors, antibiotic prophylaxis significantly reduces the incidence of suppuration after alloplasty [13, 14, 17]. In our clinic it is carried out according to the following scheme: 30-40 min before the operation amoxiclav 1.2 g intravenously (intravenous) is administered.

The greatest danger for patients' life is pulmonary embolism and abdominal compartment syndrome, lethality in this case can be up to 10% [3]. Prevention of thromboembolic complications begins immediately before surgery. It includes elastic compression of the lower extremities and anticoagulant therapy. Elastic compression should be performed in all patients with POVH before transportation to the operating room until full activation of the patient 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 fatal outcome as a result of TELA. This patient had a high risk of thromboembolic complications due to the presence of obesity of III–IV degree, large size POVH, varicose veins of the lower extremities. Prophylactic measures were carried out in the usual manner. In spite of this, a lethal outcome occurred. Probably, in such category of patients it is necessary to be more cautious in favor of surgery and in some cases conservative methods of treatment should be limited. To predict the development of increased intra-abdominal pressure syndrome, it is currently recommended to perform X-ray computerized hernio-abdominometry [2]. The technique allows to assess the state of the abdominal wall, determine the volume of the abdominal cavity and hernial protrusion, and plan the technique of the forthcoming plasty.

Intraoperative stage of prevention of early postoperative complications is the most important and determines the success of surgery, as well as the quality of life of the patient. Often POVH is combined with other pathologies of the anterior abdominal wall requiring surgical correction. Thus, in 8 (5.6%) patients POVH was combined with diastasis of rectus abdominis muscles, and in 23 (16%) – with sagging abdomen. Diastasis elimination was performed by applying invaginating sutures to the vaginas of the rectus abdominis by the Championeer method with simultaneous implantation of the mesh prosthesis under the aponeurosis. In the presence of saggy abdomen, abdominoplasty was performed.

The question of the necessity of draining the surgical wound is debatable. Some surgeons question the necessity of wound drainage after alloplasty and consider it as one of the factors that contributes to its suppuration [16]. We approach wound drainage in a differentiated manner. In onlay plasty we necessarily drain the wound for no more than 4-5 days. In sublay plasty in patients with small and medium-sized hernias we refrain from placing drains, we install them only in patients with obesity and with extensive hernias.

Management of the early postoperative period also influences the results of treatment. After alloprosthesis in patients with large and giant hernias we use prolonged peridural analgesia, which is an effective method of prevention of intestinal paresis. In this case, the pain syndrome is successfully controlled, which contributes to earlier activation of the patient.

An important role in the diagnosis and prevention of wound complications is played by ultrasound of the postoperative wound. In case of fluid accumulation of more than 20 mm, seroma puncture under ultrasound navigation is performed.

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

CONCLUSION

Thus, to improve the results of surgical treatment of POVH using plasty with mesh prostheses it is necessary to fulfill a number of recommendations.

1. In patients with POVH a comprehensive examination should be carried out in the preoperative period to identify concomitant diseases and to correct disorders of the functions of organs, systems and homeostasis indicators.

2. In patients with high surgical risk due to the probability of dysfunction of vital organs and systems, thromboembolic complications and development of compartment syndrome, it is advisable to limit conservative treatment (wearing a bandage).

3. All patients with POVH should be prophylactically treated for thromboembolic complications both before surgery and in the early postoperative period.

4. In the presence of abdominal diseases requiring surgical correction, it is advisable to perform simultaneous surgery with the choice of optimal access.

5. The issue of drainage of the operation area should be approached in a differentiated manner. It is advisable to install vacuum-aspiration systems for drainage in case of significant detachment of subcutaneous tissue. The terms of drainage should be short (within 4-5 days).

6. In the presence of fluid formations, the best is a closed method of treatment – puncture under ultrasound navigation.

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