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НОВЫЙ ДЕНЬ В МЕДИЦИНЕ
NEW DAY IN MEDICINE

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www.bsmi.uz
https://newdaymedicine.com E: ndmuz@mail.ru
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AN INNOVATIVE APPROACH IN THE PROPHYLAXIS AND TREATMENT OF LATE WOUND COMPLICATIONS, FISTULAS IN PATIENTS WITH POSTOPERATIVE VENTRAL HERNIAS

Akhmedov Akhmat Ibrogimovich https://orcid.org/0000-0002-9444-4562

Tashkent Pediatric Medical Institute, Uzbekistan 100140, Tashkent, 223 Bogishamol St,
tel: 8 71 260 36 58 E.mail: interdep@tashpmi.uz

✓ ***Resume***

The article presents the experience of an innovative approach to reducing postoperative wound complications of allohernioplasty in patients with ventral hernias. The authors divided the patients into 3 groups: the control group (67 patients) who underwent traditional alloplasty using a polypropylene (PP) mesh, the 1st main (61 patients) group, which used the PP mesh for alloplasty after processing it with a hemogub and polymixine, 2-main (43 patients) a group who underwent alloplasty after treatment of the PP mesh with a hemogip in combination with an antiseptic miramistin

Keywords: allohernioplasty, ventral hernia, endoprosthesis, hemoguba

ИННОВАЦИОННЫЙ ПОДХОД В ПРОФИЛАКТИКЕ И ЛЕЧЕНИИ ПОЗДНИХ РАНЕВЫХ ОСЛОЖНЕНИЙ, СВИЩЕЙ У ПАЦИЕНТОВ С ПОСЛЕОПЕРАЦИОННЫМИ ВЕНТРАЛЬНЫМИ ГРЫЖАМИ

Ахмедов Ахмат Иброгимович

Ташкентский педиатрический медицинский институт, 100140, Узбекистан Ташкент,
ул. Богишамол, 223, тел: 8 71 260 36 58 Email: interdep@tashpmi.uz

✓ ***Резюме***

В статье представлен опыт применения инновационного подхода к снижению послеоперационных раневых осложнений при аллогерниопластике у пациентов с вентральными грыжами. Авторы разделили пациентов на 3 группы: контрольную (67 пациентов), которым была выполнена традиционная аллопластика с использованием полипропиленовой (ПП) сетки, 1-ю основную (61 пациент) группу, в которой для аллопластики использовали ПП сетку после обработки ее гемогубом и полимиксином, 2-ю основную (43 пациента) группу группа, перенесшая аллопластику после обработки полипропиленовой сетки гемогипсом в сочетании с антисептиком мирамистином

Ключевые слова: аллогерниопластика, вентральная грыжа, эндопротезирование, гемогуба

ОПЕРАЦИЯДАН КЕЙИНГИ VENTRAL ЧУРРАСИ БЎЛГАН БЕМОРЛАРДА КЕЧ ЯРА АСОРАТЛАРИ, ФИСТУЛАЛАРНИНГ ПРОФИЛАКТИКАСИ ВА ДАВОЛАШДА ИННОВАЦИОН ЁНДАШУВ

Ахмедов Ахмат Иброгимович

Тошкент педиатрия тиббиёт институти, Ўзбекистон 100140, Тошкент, Боғишамол кўчаси 223,
тел: 8 71 260 36 58 E.mail: interdep@tashpmi.uz

✓ ***Резюме***

Мақолада ventral чурраси бўлган беморларда аллоҳерниопластиканинг операциядан кейинги яра асоратларини камайтиришга инновацион ёндашув тажрибаси келтирилган. Муаллифлар беморларни 3 гуруҳга бўлишди: полипропилен (ПП) тўр ёрдамида анъанавий аллопластикадан ўтган назорат гуруҳи (67 бемор), 1-асосий (61 бемор) гуруҳи, ПП тўрини гемогуб ва полимиксин билан қайта ишлагандан сўнг аллопластика учун ишлатган, 2-асосий (43 бемор). ПП тўрини антисептик мирамистин билан биргаликда гемогип билан даволашдан кейин аллопластикадан ўтган гуруҳ

Калит сўзлар: аллоҳерниопластика, ventral чурра, ендопротез, гемогуба

Relevance

The supaponeurotic method of fixing the endoprosthesis "on lay" is the most frequently used method in clinical practice, since it is justified from the standpoint of biomechanics; the most durable soft tissues of the anterior abdominal wall are the anterior sheaths of the rectus muscles, to which the endoprosthesis is fixed [3]. A characteristic disadvantage of "on lay" fixation of a polypropylene endoprosthesis is the need for a wide detachment of the subcutaneous fat with the skin from the aponeurotic tissues. In this case, damage to the lymphatic and blood vessels occurs, which in some cases provides abundant wound exudation. According to B.Sh. Gogia et al., [2], long-term results of surgical treatment of hernia in 243 patients with various complications from the wound, it was noted that hernia recurrence occurred in 77.9% of patients after wound suppuration and in 70.7% of patients who underwent hematomas and seromas.

Clinical studies were performed in the surgical clinic of Tashkent Pediatric Medical Institute and Center for the Rehabilitation of the Disabled during 2010-2022 in 3 groups of patients. The control group of patients (n = 67) was operated on for incisional hernias of the anterior abdominal wall. Lightweight polypropylene mesh was used (Esfil lightweight, surface density - 38 g / m2, monofilament diameter - 0.09 mm, thickness 0.3-0.4 mm, pore size - 1.5 mm, volumetric porosity 85-90%) with by fixing it on the anterior abdominal wall in the “on lay” position. The meshes were fixed with 2/0 polypropylene non-absorbable monofilament. For the prevention of seromas and pyoinflammatory wound complications, we for the first time used a new domestic biodegradable drug, a local hemostatic "Hemogubka" collagen (HemG), which was developed at the Research Center of Chemistry and Physics of Polymers of the Academy of Sciences of the Republic of Uzbekistan and State Institution "RSNPTSH named after Acad. Vakhidov ”[5].

The first main group of patients (n = 61) was also operated using a polypropylene mesh (Esfil light, specific gravity 38 g / m2, pore size 1.5 mm, monofilament mesh, monofilament diameter 0.09 mm) coated with HemG in position "On lay".

The second main group of patients (n = 43), who underwent allohernioplasty (Esfil lung), was performed in the initially infected tissues, in which the source of infection is ligature fistulas and inflammatory infiltrates that occur after previous operations. In this group, during hernia orifice repair, the polypropylene mesh after its fixation was treated with HemG in combination with a broad-spectrum antibiotic, miramistin.

Materials and methods

The characteristics of patients by sex, age are presented in table. one As follows from Table 1, the number of patients by gender and age is representative in all groups.

Table 2 shows the distribution of patients by comorbidity in the compared groups. As can be seen from Table 2, almost 81% of patients had some kind of concomitant diseases, among which cardiovascular diseases, respiratory diseases and diabetes mellitus, as well as obesity, were more common. They are risk factors and can cause postoperative systemic complications.

Table 1 Distribution of patients by sex in the compared groups

Floor	I main group(n=61)		II main group(n=43)		Main group (n=67)	
	абс.	**%**	**абс.**	**%**	**абс.**	%
Men	34	55,7±6,4	23	53,5±7,7	41	61,2±6,0
Women	27	44,3±6,4	20	46,5±7,7	26	38,8±6,0
Total :	61	35,7±3,7	43	25,1±3,8	67	39,2±3,7

We used the classification of J.P. Chevrel and A.M.Rath (1999) [8], which distinguish incisional hernias of the abdominal wall by localization, size of 102ernia orifice and frequency of recurrence after primary surgery (Table 3).

Distribution of patients by localization of 102ernia defect according to the classification of J.P. Chevrel and A.M.Rath in the compared groups of the 103ernia defect in the two main groups and in the comparison group. As presented in the table, the main group consisted mainly of patients with 103ernia defects W2 and W3.

Sign	I main group (n=61)		II main group (n=43)		Main group (n=67)	
	абс.	%	абс.	%	абс.	%
M1	40	65,6±6,1	28	65,1±7,4	41	61,2±6,0
M2	11	18,0±5,0	9	20,9±6,3	18	26,9±5,5
M3	6	9,8±3,8	5	11,6±4,9	5	7,5±3,2
M4	3	4,9±2,8	1	2,3±2,3	1	1,5±1,5
L3	1	1,6±1,6	-	-	2	3,0±2,1
Total	61	35,7±3,7 43		25,1±3,3 67		39,2±3,7

Distribution of patients by the size of 103ernia defect according to the classification of J.P. Chevrel and A.M.Rath in the compared groups, Distribution of patients by hernia localization according to the classification of J.P. Chevrel and A.M.Rath in the compared groups.

In the patients of the comparison group, after the application of the PP mesh in the onlay position, all had a discharge of serous-hemorrhagic exudate, especially in the repair of large incisional hernias. In 23 (%) patients in this group, the drainage time was more than 4 days due to the continued release of exudate in a volume of more than 30-40 ml per day (Table 6). In main group I, in 53.33% of patients, the drainage tube was removed on the first day after surgery, on day 2 in 11 (36.66%), in 3 (10%) patients, the drainage was removed on day 3 after surgery. In main group II, the drainage tube was removed on day 1 in 10 (41.66%), on day 2 in 12 (50%) patients, in 2 (8.33%) patients on day 3. The average duration of wound drainage in main groups I and II was 1.78 ± 0.46 and 2.14 ± 0.18 days, respectively, and in the comparison group it was 3.86 ± 0.28. It should be noted that in the 1st main group in 24 and in the 2nd main group in 13 patients the postoperative wound was not drained and there were no complications associated with the refusal of drainage.

Sign	Imain group (n=61)		II main group (n=43)		Main group (n=67)	
	абс.	%	абс.	%	абс.	%
M (median)	60	98,4±1,6	43	100±0,0	65	97,0±2,1
L (side)	1	1,6±1,6	-	-	2	3,0±2,1
M+L(combination)	-	-	-	-	-	-
Total:	61	100	43	100	67	100

Note: * - reliable compared with the indicators of the control group (* - P <0.05; ** - P <0.01; *** - P <0.001)

& - in 24 patients in the main group I and in 13 patients in the main group II, the postoperative wound was not drained.

When studying the dynamics of the formation of wound exudate, we found that in comparison with the control group in patients of the main groups, this indicator is statistically significant (p = 0.007) and significantly less, especially on days 2-4. In the comparison group in patients, the maximum values of exudate were 131.3 ± 8.7 ml, and in the.

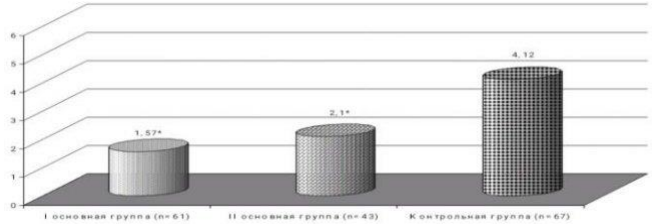
Results and discussions

I main and in the II main group, respectively, 56.1 ± 6.8 and 53.1 ± 6.8 ml. It should be noted that the highest production of exudate during the wound process in the main group takes place by 2 days after the operation and subsequently tends to decrease, while in patients of the control group the peak of the volume of exudate released through the drainage falls on days 2-4. In order to objectify the study and control the adequacy of drainage of the implantation area, the patients underwent ultrasound examinations of the anterior abdominal wall in the implantation area for 2-5 days.

Shows the duration of postoperative wound drainage in the main group and in the comparison group. In the 1st main group, the duration of drainage was minimal; 1.78 ± 0.46, and in the second main group 2.14 ± 0.18.

We associate the relatively long drainage in the second main group with the fact that the operations were performed under conditions of infection. Given these circumstances, in some cases, the drainage tubes were removed on day 3, and in 1 patient the drainage was removed on day 4. The criterion for the removal of drainage was a decrease in the volume of exudation below 30 ml and the results of a control - dynamic ultrasound examination of the operation zone.

Figure 1 shows the duration of serous exudation in patients of the main groups and the comparison group P <0.001)



Pic. 1. Duration of serous exudation in patients of the main groups and the comparison group

Note: * -reliable compared with the indicators of the control group (* -).

In a number of cases in the comparison group, the discharge of serous discharge was delayed and did not have a tendency to decrease in volume. However, there were no infiltrative changes in the postoperative wound. In the main group, the duration of serous exudation was 1.78 ± 0.46 *, and in the II main group 2.14 ± 0.18 * days. As can be seen from table 4.9, in the control group, the duration of serous exudation in comparison with the main groups exceeded more than 2 and 2.5 times, respectively.

In the I main group in 9 and in the II main group in 7 patients the postoperative wound was not drained, i.e. in 16 patients. According to the classification of J.P. Chavrel et A.M. Rath (1999), 9 patients had medium-sized hernias (W2), 7 - large ones (W3). In 15 patients, the hernial defect was localized in the midline M, and in 1 patient in the right iliac region (L). From the first day, the patients underwent control-dynamic ultrasound examination of the postoperative wound for the presence of fluid accumulations in the subcutaneous tissue, in the area of the allograft. On the 3rd day in 1 patient, ultrasound examination revealed the presence of a seroma in the form of a cavity formation of a homogeneous structure of small size (3X2 cm), which resolved without additional interventions.

Prevention measures for wound complications of allohernioplasty were aimed at eliminating the causes of complications: 1) careful hemo- and lymphostasis; 2) prevention of seroma formation; 3) careful elimination of dead zones in the area of plastic hernial orifice (between the aponeurosis and muscles, mesh); 4) using GemG to achieve sealing of the pores of the mesh of a light mesh, because bacteria penetrate into the pores, the diameter of which is 0.6-1.5 microns, and the first hours and days in the operation zone of the cells responsible for local immunity, as a rule, do not appear; 5) mesh treatment with a mixture of HemG and a broad-spectrum antibiotic is aimed at combating infection in the area of the surgical wound and with implantation infection, because the antibacterial properties of miramistin are preserved until the HemG is completely absorbed. Local complications in patients operated on using PP are presented in Infiltrates in the area of wounds during endoprosthetics in most cases associated with a natural reaction of the body to a foreign body. It should be noted that the HemG preparation is a powder and after the end of the alloplasty of the hernial orifice in the on-lay position, the entire surface of the mesh and the edges of the surgical wound is covered with powder, while the hemo- and lymphorrhea stops instantly, and the mesh pores are filled with the powder of the preparation.

Within 3-5 minutes, the powder takes on a gel-like consistency, dead zones in the plastic area are eliminated, the mesh is glued to the aponeurosis and muscles. Considering that one of the reasons for the formation of seroma is the wide separation of the skin with subcutaneous fatty tissue, as a rule, over 5 cm.In cases of a well-developed muscular-aponeurotic complex, the mobilization of the skin and subcutaneous tissue was carried out up to 3-4 cm. volume of a foreign body, i.e. mesh and areas of detachment of subcutaneous adipose tissue. In addition, using vertical U-shaped sutures, the subcutaneous tissue was fixed to the prosthesis and the bottom of the wound. Thus, the use of HemG, as well as the closure of the wound with U-shaped sutures, allowed us in some cases to refuse to drain the wound.

These measures allowed us to reduce seroma formation, i.e. predictor of postoperative wound suppuration and improve treatment results. The II main group included patients with a burdened history of the presence of foci of infection or dormant infection in the area of the hernial defect. In this group, we also used the same approaches as in the 1st main group, and taking into account the likelihood of infection in the area of surgical intervention, immediately before the ex tempore operation, we prepared a mixture consisting of HemG and the antibiotic miramistin (2 grams). It should be noted that the prepared combination of HemG and the antibiotic Miramistin fills the pores of the mesh, and thus a prolonged antibacterial action of the mesh is ensured in the process of HemG biodegradation (the period of HemG biodegradation is 14 days). The postoperative wound in the II main group was sutured as in the I main group in order to eliminate the dead space.

From Table 8 it follows that in the comparison group, complications of prosthetic hernioplasty were observed in 24 (35.8%) cases, of which the highest frequency was long-term seroma discharge (1.5%). We observed the formation of a hematoma in the area of mesh implantation in 4 patients suffering from obesity of II and III degrees (BMI 25-40 kg / m), who had in two cases a large and 1 giant multichamber postoperative hernia. To what extent they were associated with the technique and the inevitable trauma of the operation, possibly with the use of electrocoagulation for hemostasis. In all cases, the hematomas

were drained through the surgical wound. Wound suppuration was observed in 4 (6%) cases, with 2 patients being overweight and 2 suffering from diabetes mellitus. The wounds were treated according to the general principles of treatment of purulent wounds, with a satisfactory outcome. We observed postoperative wound infiltration in 3 (4.47%) patients. On the one hand, this complication is associated with a natural reaction of the body to a foreign body, the traumatic nature of the operation, as well as the use of electrocoagulation for the purpose of hemostasis in a large area.

Conclusion

As can be seen from Table 8, in the control group, wound suppuration occurred in 4 (6%) patients, and in the main group, we did not observe wound suppuration. We associate high rates of postoperative wound suppuration in the control group with the use of electrocoagulation for hemostasis, which causes necrosis of the subcutaneous tissue, and in some cases of muscles, is a breeding ground for infection. Therefore, in this group of patients in the postoperative period, there is a relatively prolonged hyperthermia after surgery. Thus, the domestic drug "Hemogubka" collagen is an effective means of hemo- and lymphostasis, has high adhesive characteristics and provides reliable hemostasis. In allohernioplasty of incisional hernias, it is necessary to sharply limit the use of electrocautery for the purpose of hemostasis. The use of a new domestic drug, local hemostatic "Hemogubka" collagen in allohernioplasty of large ventral hernias is an effective drug as a means of preventing seromas, hematomas, reducing wound discharge and purulent complications. The set of measures developed by us made it possible to reduce postoperative complications, the duration of hospital stay in the I main group - 5.9 ± 1.74 bed-days, in the II main group - up to 6.1 ± 2.12 bed-days, and in the control group - 11.3 ± 3.47 bed-days.

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