



Copyright: Original content from this work may be used under the terms of the creative commons attributes 4.0 licence.

Optimization Of Tactical And Technical Aspects Of Surgery Of Abdominal Hernia And Combined Pathology Of The Abdominal Cavity Organs

Zafar Babajanovich Kurbaniyazov

Doctor Of Sciences Samarkand State Medical Institute, Uzbekistan

Ulugbek Ahrarovich Sherbekov

Doctor Of Philosophy Samarkand State Medical Institute, Uzbekistan

Bobosher Amirovich Mardonov

Doctor Of Philosophy Samarkand State Medical Institute, Uzbekistan

ABSTRACT

The results of surgical treatment of 197 patients with ventral hernias were analyzed, while 104 (52.8%) patients underwent simultaneous operations to correct the surgical pathology of the abdominal cavity organs and the anterior abdominal wall. In 20.1% of patients, the simultaneous stage of the operation was performed using a separate minilaparotomic approach. Tension alloplasty methods were performed in 48.2%, non-tension methods - in 51.8%, while 26.4% of patients underwent dermatolipidectomy. The study of the level of stress hormones during simultaneous operations on the abdominal cavity and abdominal wall organs in patients with ventral hernia showed that the degree of surgical aggression in most cases was influenced by the "tension" method of plasty of the anterior abdominal wall and the duration of the operation. Performing the stage of the operation to correct the pathology of the abdominal organs did not significantly affect the level of stress hormones.

KEYWORDS

Ventral hernia, simultaneous pathology, surgical correction.

INTRODUCTION

In patients with ventral hernias, the frequency of concomitant surgical diseases of the abdominal cavity ranges from 11.8 to 46.3%. In

patients with hernias, pathology in the gallbladder is most often detected, in women - in the pelvic organs. Approaches to performing

simultaneous interventions in patients with hernias have their own characteristics, since the location of the organs in which there is a pathology may not coincide with the localization of the hernia. Special problems can be caused by the presence of obesity, adhesive disease, chronic and subacute intestinal obstruction. [5, 7, 8, 10, 11, 12].

In the treatment of patients with hernias, the choice of a method of surgery that should not increase intra-abdominal pressure is a key issue of treatment. Such requirements are met by non-tensioning methods of closing defects in the abdominal wall [1, 3, 6, 9, 13, 14].

The prevention and treatment of abdominal and extra-abdominal complications, which reach 35%, remains a complex problem, which is often associated with surgical aggression, the aspects of which are not sufficiently studied in simultaneous operations [2, 4, 7, 15, 16]. All this requires a detailed study of the tactical and technical aspects of the operation both at the stage of herniation, and at the intra-abdominal stage and at the stage of closing the abdominal cavity.

Purpose of the research: substantiation of the tactical and technical aspects of surgical treatment of patients with ventral hernia and concomitant pathology of the abdominal cavity, aimed at reducing the frequency and severity of complications after simultaneous operations.

MATERIALS AND METHODS OF RESEARCH

In the period 2014-2019, we operated on 197 patients with ventral hernias. Of these, 104 (52.8%) patients made up the main group, who underwent simultaneous interventions for diseases of the abdominal cavity that require surgical correction. 93 (47.2%) patients underwent only hernioplasty, they made up the comparison group.

The age of the patients at the time of the operation was from 16 to 78 years (average age 49.4±11.8 years). Female patients predominated: women–108 (54.8%), men–89 (45.2%). In the main group, there were 59 women (54.6%) and 45 men (50.6%). In the comparison group, women – 49 (45.4%), men–44 (49.4%).

The study methods met the clinical standards recommended by the WHO and the Ministry of Health of the Republic of Uzbekistan-assessment of the general condition, detection of concomitant diseases and the degree of their compensation; -general clinical laboratory tests; - ultrasound, MSCT, endoscopic examinations.

They followed the SWR classification of J. P. Chevrel and A. M. Rath (approved at the XXI International Congress of Herniologists in 1999).

Median hernias (MH) were the most numerous group-184 (93.4%), lateral abdominal hernias (LAH) - 13 (6.6%) patients. In 20 (10.2%) patients, ventral hernia was small (W1), in 50(25.4%)-medium (W2), in 69 (35%) – large (W3), in 58 (29.4%)- huge (W4) sizes. 174 (88.3%) patients were admitted with a postoperative ventral hernia, and 23 (11.7%) with a first – time hernia. In our study, the overwhelming contingent consisted of 127 patients (64.5%) with postoperative hernias of the median localization of large and huge sizes.

In total, 104 patients of the main group revealed 178 simultaneous pathologies of the abdominal organs that required surgical correction (28 patients-2 simultaneous pathologies, 6 – 3). Most often, patients with ventral hernias revealed gallstone disease-29 (27.8%), pelvic pathology in women – 31(30.7%), abdominal adhesions - 67 (64.4%), obesity of the III – IV st.. saggy belly – 32 (30.7%), etc. (table 1).

Simultaneous pathology was diagnosed at the preoperative stage in 74.6%, intraoperative-25.4%.

Summary data on the treatment of patients with hernias showed that with an increase in

the size of hernias, the number of patients requiring simultaneous interventions increased. Small hernias (W1) revealed 16 (15.3%) simultaneous pathologies, W2 – 31 (29.8%), W3 – 62 (59.6%), and W4 - 69 (66.3%).

Table 1

Simultaneous pathology in patients with abdominal hernias (n=104)

Simultaneous pathology	Total	
	n	%
Cholelithiasis	29	27,8
Liver cysts	6	5,7
Pancreatic cysts	2	1,9
Adhesive disease, chronic, subacute intestinal obstruction	67	64,4
Ovarian cyst	9	8,6
Uterine fibroids	22	21,1
Ligature fistulas and pseudocysts of the anterior abdominal wall	11	10,5
Obesity III-IV degree saggy belly	32	30,7
Total	178	170,7

65.4% of patients in the main group and 61.3% in the comparison group had concomitant somatic pathology that required perioperative preparation: - diseases of the cardiovascular system (40.6%); - respiratory organs (11.8%); - diabetes mellitus (4.3%); - obesity of the III-IV degree (28.7%), etc.

In the distribution of patients according to the degree of operational and anesthesiological risk (according to ASA), 52.8% of patients corresponded to class I, Class II -36.5%, and Class III – 10.7% of patients. When assessing the operational and anesthesiological risk, we took into account not only the presence of somatic pathology, but also its clinical and laboratory signs. In this connection, we have developed a

program for scoring the prediction of the development of perioperative complications, for which we received a certificate of official registration of the computer program No. DGU 03724 of the Intellectual Property Agency of the Republic of Uzbekistan.

When the patients of the main group were distributed on a modified scale with a total of more than 20 points, they were assigned to the high – risk group (8 patients), 11 - 20 points – medium risk (34), 0 - 10 points-low risk (62). The simultaneous operation was considered possible if the total score was less than 10-15 points, and patients who scored more than 15 points received preoperative preparation until its stable decline. The preoperative training

program included artificial hypertension of the abdominal cavity using a special belt-bandage (utility model-pneumatic belt-bandage IAP 2016 0046).

When choosing a surgical approach, the location of the hernial gate was first taken into account, then the location of the organ with simultaneous pathology in the abdominal cavity. In this connection, we have developed a

schematic dystopia, i.e. the localization of a hernial defect on the abdominal wall and the location of the simultaneous pathology in the abdominal cavity. The nature of hernial protrusion was evaluated according to the classification of Chervel J. P. and Rath A.M. and the location of the simultaneous pathology was guided by the topographic division of the abdominal cavity into 9 regions (Fig. 1).

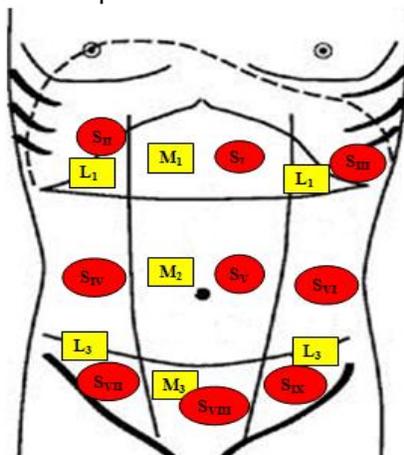


Figure 1. Schematic location of a hernia on the anterior abdominal wall and a simultaneous pathology in the abdominal cavity (L, M-localization of a hernia according to Chervel J. P. and Rath A.M., S-localization of a simultaneous pathology in various areas of the abdominal cavity).

When surgical diseases were located at a wide distance from each other, each pathology was operated on through separate accesses (Table 2).

Table 2

Distribution of patients of the main group according to hernia dystopia and simultaneous pathology

The nature of the hernia			Location of the simultaneous pathology in the abdominal cavity areas				Total
			S _{II}	S _V	S _{VIII}	S _{II-S_{VIII}}	
S	M	M ₁	20*		10	1	31
		M ₂	9	23	17		49
		M ₃	5	4	7		16
		M ₄	1				1
	L	L ₁	2		1	1	4
		L ₃	1			2	3
			44	17	39	4	
W	W ₁	1	2	6	2	11	
	W ₂	8	7	6	5	26	
	W ₃	15	9	12		36	
	W ₄	16	8	7		31	
R	R ₀	39	13	38	3	93	
	R ₁	4	1	1	1	7	
	R ₂		3			3	
	R ₃	1				1	
*Note:			- simultaneous operation via a single access;				
			- simultaneous operation via separate accesses.				

In general, in the main group of 21 patients (20.1%), the stage of surgery for the correction of surgical pathology of the abdominal organs was performed from a separate access. At the same time, all 21 patients underwent a

simultaneous stage of the operation using a mini-laparotomic approach (if necessary, with video-assisted access). In 83 patients (79.8%), all stages of the operation were performed using a single herniolaparotomy approach.

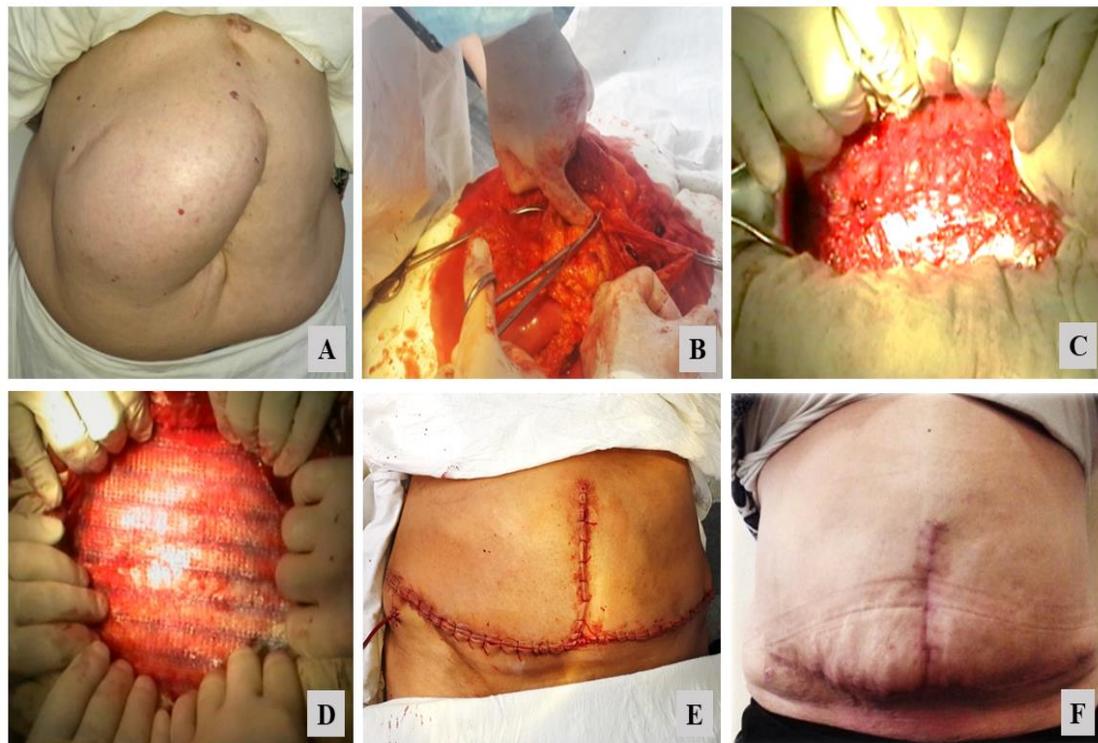
Patients in both study groups had a differentiated choice of hernioplasty (Table 3).

Table 3
Types of hernioplasty in the main group and the comparison group

Type of operation	Main group		Control group		Total
	abc.	%	abc.	%	
Tension methods of alloplasty					
Implantation of the "onlay" endoprosthesis with suturing of the defect (+DLE)	49 (4)	47,1	46 (3)	49,5	95 (7)
Non-strenuous methods					
Implantation of the "onlay" endoprosthesis without suturing the defect (+DLE)	44 (19)	42,3	38(12)	40,9	82 (31)
Implantation of the "onlay" endoprosthesis without suturing the defect with the mobilization of the vaginas of the rectus abdominis muscles according to Ramirez (+DLE)	11 (9)	10,6	9(5)	9,7	20 (14)
Total	104	100	93	100	197 (52)

For various constitutional features, taking into account the risk of tissue tension affecting the course of the postoperative period, 49 patients of the main group and 46 of the comparison group, we performed a combined plastic surgery-the aponeurosis defect was sutured

edge to edge (Fig. 2C) with additional strengthening of the suture line with polypropylene mesh (Fig. 2D). This made it possible to create optimal conditions for the formation of a strong postoperative scar.



Stages of combined hernioalloplasty in postoperative lateral abdominal hernia (A) with viscerolysis (B), suturing of the edges of the aponeurosis defect (C), with additional strengthening of the suture line with polypropylene mesh (D), anterior abdominal wall after surgery (E), one year later (F).

In patients with a high risk of tissue tension and increased intra-abdominal pressure in order to increase the volume of the abdominal cavity and prevent the development of compartment syndrome (44 patients of the main group and 38 patients of the comparison group), plastic surgery of the anterior abdominal wall was performed by a non-tensioning method, i.e., applying a mesh to the aponeurosis without suturing it.

In 19 (9.6%) patients with grade III obesity, when there was a high risk of excessive tissue tension during suturing and a high probability of eruption of sutures, we used non-tensioned alloplasty with mobilization of the vaginas of the rectus abdominis muscles according to Ramirez (Fig. 3.)

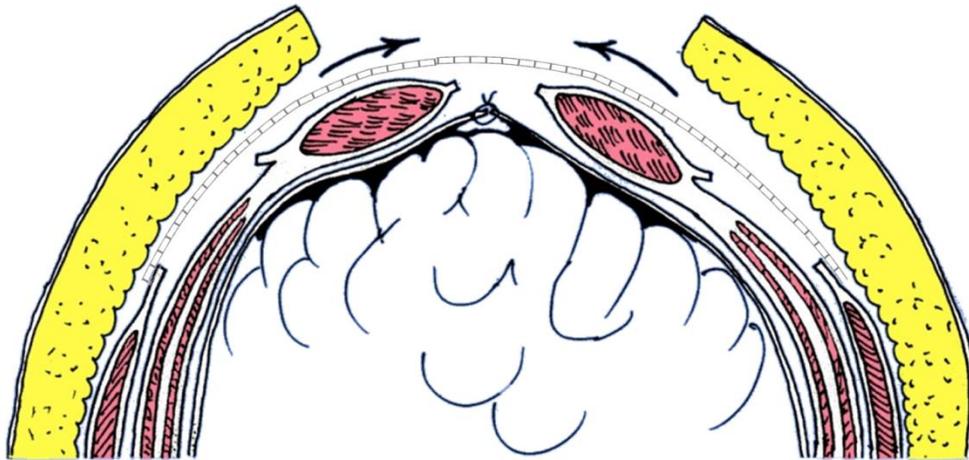


Figure 3. Reconstruction of the anterior abdominal wall with the mobilization of the rectus muscles according to Ramirez.

The advantages of this technique is that the mobilization of the vagina of the rectus abdominis muscles allows you to evenly distribute and significantly reduce the pressure on the tissue when suturing. The use of an allograft helps to strengthen the suture line and creates optimal conditions for the formation of a full-fledged scar.

52 patients who had concomitant pathology in the form of obesity of the II-III degree after the completion of the anterior abdominal wall plastic surgery also underwent dermatolipidectomy (DLE), along the line previously applied to the anterior abdominal

wall before the operation, bordering the hernial protrusion, the old postoperative scar and the skin-fat fold according to Castanares (Fig. 4A). Bec the excess skin-fat flap was from 4 to 12 kg. After the completion of hernioalloplasty-implantation of the "onlay" endoprosthesis without suturing the defect (Fig. 4B), according to the indications, depending on the volume of the operation on the aponeurosis, a perforated drainage tube was left along the Redon, the free ends of which were removed below the horizontal incision and fixed to the skin (Fig. 4C).



Figure 4. Stages of hernioplasty: - incision along the line previously applied to the anterior abdominal wall before surgery, which borders the hernial protrusion, the old postoperative scar and the skin-fat fold according to Castanares (A), implantation of the endoprosthesis "onlay" without suturing the defect (B), the anterior abdominal wall after abdominoplasty (C).

To evaluate the effectiveness of the treatment results of patients in the compared groups, the following parameters were studied as the main criteria:- abdominal complications of the early postoperative period; - extra-abdominal complications of the early postoperative period; - wound complications in the early postoperative period.

Abdominal complications in the early postoperative period such as intestinal paresis, urinary retention were noted in the main group in 5 (4.8%) patients, in the comparison group – 4 (4.3%). Extra-abdominal complications of the bronchopulmonary and cardiovascular systems developed in 6 (5.7%) patients of the main group and also in 6 (6.4%)

patients of the comparison group. The development of compartment syndrome occurred in 2 cases, one in each study group. Among wound complications, hematomas were noted in 3 and 1, seromas in 4 and 3, lymphorrhea in 1 and 2, and necrosis of the edge of the skin flap in one case in each group.

When considering the time characteristics, it was noted that in the intensive care unit, patients of the main group were on average 1.3 ± 0.1 days (1.1 ± 0.1 gy. comparison), after surgery 6.7 ± 0.3 days (6.3 ± 0.5 gy. comparison); in total, in the hospital – 10.2 ± 0.4 days (9.4 ± 0.6 gy. comparison). In turn, the average duration of the operation in the main group of patients

was 72.5 ± 3.4 minutes (61.5 ± 4.1 years of comparison (table 6).

In the immediate postoperative period, 2 patients died, 1 (0.9%) in the main group, and 1 (1.1%) in the comparison group. The fatal outcome in both patients was due to acute cardiovascular insufficiency, the cause of which was a pulmonary embolism.

In the long-term period from 1 to 5 years, the results of the operation were traced in 74 (67.3%) patients of the main group and 65 (62.5%) patients of the comparison group. Of the 139 patients examined in the long term, the recurrence of ventral hernia was noted in 5 (2.5%) patients, in the main group – 3 (2.8%), in the control group – 2 (2.1%).

Table 6

Time characteristics of treatment in the compared groups

Indicators	Control group	Main group	T-criterion, P
Before the operation (days)	$4,0 \pm 0,6$	$4,2 \pm 0,2$	0,32; $P > 0,05$
ICU (days)	$1,1 \pm 0,1$	$1,3 \pm 0,1$	2,83; $P < 0,01$
After the operation (days)	$6,3 \pm 0,5$	$6,7 \pm 0,3$	8,57; $P < 0,001$
Total (days)	$9,4 \pm 0,6$	$10,2 \pm 0,4$	7,63; $P < 0,001$
Operation duration (min.)	$61,5 \pm 4,1$	$72,5 \pm 3,4$	2,57; $P < 0,05$
Terms of drainage removal by Redon (day)	$3,5 \pm 0,3$	$3,5 \pm 0,3$	4,80; $P < 0,001$
Terms of removal of the safety drainage from the abdominal cavity (day)	$1,3 \pm 0,4$	$3,5 \pm 0,3$	0,43; $P < 0,001$

CONCLUSIONS

1. According to our study, simultaneous pathology of the abdominal organs requiring surgical correction for ventral hernias was 52.8%, most often revealed gallstone disease (27.8%), pelvic pathology in women (30.7%), adhesive abdominal disease (64.4%), obesity of the III – IV st.saggy abdomen (30.7%). At the same time, simultaneous pathology was diagnosed at the preoperative stage in 74.6%, intraoperative-25.4%. With an increase in the size of hernias, the number of patients requiring simultaneous

interventions increases, so for W3 - 59.6%, and for W4-66.3%.

2. When assessing the operational and anesthesiological risk, it is necessary to take into account not only the presence of somatic pathology, but also its clinical and laboratory signs according to the program of score assessment for predicting perioperative complications. Performing a simultaneous operation is possible if the total score is less than 10-15 points, and if the total score is more than 15 points, preoperative preparation is necessary until its stable decline.

3. When surgical diseases are located at a wide distance from each other, the simultaneous pathology can be operated through separate accesses. In the main group, 20.1% of patients underwent the stage of surgery to correct surgical pathology of the abdominal cavity organs using a separate mini-laparotomy access (if necessary with video-assisted access), and 79.8% of patients - all stages of the operation were performed using a single herniolaparotomy access.
4. The choice of hernioplasty should be differentiated. Tension methods of alloplasty: - implantation of the "onlay" endoprosthesis with suturing of the defect was performed in 47.1% of the main group and 49.5% of the control group of patients. Non-strenuous methods: - implantation of the endoprosthesis "onlay" without suturing the defect 42.3% and 40.9%; - implantation of the endoprosthesis "onlay" without suturing the defect with the mobilization of the vaginas of the rectus abdominis muscles according to Ramirez 10.6% and 9.7% of patients of the main group and the comparison group, respectively. 26.4% of patients who had concomitant pathology in the form of obesity of II-III degree and a saggy abdomen after the completion of the anterior abdominal wall plastic surgery underwent dermatolipidectomy.
5. Complications in the compared groups in the immediate postoperative period were comparable: - abdominal complications in 4.8% and 4.3%; - extra-abdominal complications (bronchopulmonary and cardiovascular) in 5.7% and 6.4%; - development of compartment syndrome 0.9% and 1.1%; - wound complications in 9.7% and 6.7%; - mortality 0.9% and 1.1% in the main and comparison groups, respectively.
6. When considering the time characteristics, it was noted that the duration of treatment

in the hospital was 10.2 ± 0.4 days in the main group (9.4 ± 0.6 years of comparison), the average duration of surgery in the main group of patients was 72.5 ± 3.4 minutes (61.5 ± 4.1 years of comparison).

7. The implementation of the simultaneous stage of the operation in general did not negatively affect the results of surgical treatment of patients with ventral hernia and simultaneous pathology of the abdominal cavity. At the same time, getting rid of the patient from several diseases within the framework of one anesthesiological manual and surgical intervention justifies the need to perform simultaneous operations.

REFERENCES

1. Алишев О. Т., Шаймарданов Р. Ш. Современное состояние и проблемы лечения больших послеоперационных вентральных грыж //Практическая медицина. – 2013. – №. 2 (67).
2. Бабажанов А.С. Ачилов М.Т., Ахмедов Г.К., Тухтаев Ж.К., Сайдуллаев З.Я. Совершенствование методов герниоабдоминопластики при симультанных хирургических заболеваниях. // «Наука и мир» Международный научный журнал, Россия, г. Волгоград. № 4 (80), 2020, Том 2. Стр 65-67.
3. Белоконов В. И., Грачев Д. Б., Ковалева З. В. Обоснование объема операции и способа закрытия грыжевых ворот у пациентов, страдающих ожирением //Таврический медико-биологический вестник. – 2019. – Т. 22. – №. 1.
4. Винник Ю. С. и др. Современное состояние вопроса о методах хирургического лечения грыж передней брюшной стенки //Современные проблемы науки и образования. – 2013. – №. 1. – С. 24-24.

5. Кыжыров Ж. Н. и др. Ранние послеоперационные внутрибрюшные осложнения–диагностика и хирургическое лечение //Вестник Казахского Национального медицинского университета. – 2016. – №. 1.
6. Кукош М. В., Федоров В. Э., Логвина О. А. Симультантные операции, их значимость и целесообразность выполнения //Московский хирургический журнал. – 2019. – №. 3. – С. 81-89.
7. Курбаниязов З.Б., Марданов Б.А., Рахманов К.Э. Прогнозирование результатов симультантных операций на органах брюшной полости и брюшной стенки у больных с вентральной грыжей// Проблемы биологии и медицины. - 2020. №1. Том. 116. - С. 58-61.
8. Мардонов Б. А., Шербекоев У. А., Вохидов Ж. Ж. Современные подходы к лечению пациентов с вентральными грыжами симультантными патологиями //Клінічна та експериментальна патологія. – 2018. – №. 17, - № 3. – С. 118-125.
9. Мелентьева О. Н., Вострецов Ю. А., Белоконев В. И. Возможности ультразвукового скринингового обследования в выявлении хирургической патологии у взрослого населения //Вестник медицинского института «Реавиз»: реабилитация, врач и здоровье. – 2016. – №. 3 (23).
10. Паршиков В. В. Протезирующая пластика брюшной стенки в лечении вентральных и послеоперационных грыж: классификация, терминология и технические аспекты (обзор) //Современные технологии в медицине. – 2015. – Т. 7. – №. 2.
11. Пушкин С. Ю., Белоконев В. И. Результаты лечения больных срединной вентральной грыжей с применением синтетических эндопротезов //Хирургия. Журнал им. НИ Пирогова. – 2010. – №. 6. – С. 43-45.
12. Самарцев В. А., Гаврилов, В. А., Паршаков, А. А., Кузнецова, М. В. Профилактика раневых инфекционных осложнений после герниопластики сетчатыми протезами: экспериментально-клиническое исследование //Клиническая и экспериментальная хирургия. – 2020. – Т. 8. – №. 1.
13. De Simone B. et al. Emergency repair of complicated abdominal wall hernias: WSES guidelines //Hernia. – 2019. – С. 1-10.
14. Nazyrov F. G. et al. Age-related structural changes in aponeuroses of the rectus abdominal muscles in patients with postoperative ventral hernias //Клінічна та експериментальна патологія. – 2018. – №. 17, № 3. – С. 74-79.
15. Abdullaev, S., Rahmanov, U., Abdullaeva, L., & Toirov, A. (2020). REVIEWS OF COMPLICATIONS AND TREATMENT TACTICS FOR EXTERNAL HERNIAS OF THE ANTERIOR ABDOMINAL WALL. European Journal of Molecular & Clinical Medicine, 7(2), 2434-2439.
16. Эгамбердиев, А. А., Азимов, Р. Р., Шамсиева, Д. А., Курбаниязова, А. З., Джалолов, Д. А., & Вохидов, Ж. Ж. (2018). Усовершенствованный метод ненапряжной герниоаллопластики при паховых грыжах. In Молодежь и медицинская наука в XXI веке (pp. 448-450).