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CHOICE OF A METHOD OF SURGICAL TREATMENT OF PATIENTS
WITH HERNIAS OF A FORWARD BELLY WALL

5A720 113- Surgery

Master's research project

for master's degree

specialty "surgery"

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Tashkent – 2013

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LIST OF REDUCTIONS

AP-abdominal pressure

JHM-joint hypermobility

CTD -connective tissue dysplasia

CF -collagen fibers

MMP –matrixmetalloproteinase

EAH- externalabdominal hernia

IDCT-inherited disordersof connective tissue

PI –podometricindex

MVP-mitral valve prolapse

POVG-postoperativeventralhernia

EVH-recurrentventralhernia

CT -connective tissue

TIMMP- tissueinhibitorof matrixmetalloproteinase

Ultrasound -ultrasound

EF -elastic fibers

ECG -electrocardiogram

EchoCG-echocardiography

INTRODUCTION

Relevance of the work

External abdominal hernia (EAH) - one of the most common surgical disease that affects 3-7% of the population of Uzbekistan, which is 50 to 20 thousand people. Number of procedures per year of operations for abdominal wall hernias in the world is 20 million, Uzbekistan - about 10 thousand hernia repair are second in frequency space after appendectomy in surgical hospitals.

Identification and remediation hernia carriersey - an important task not only medical but also social terms in connection with the probability of incarcerated hernia, and rising treatment costs. Mortality in strangulated hernia is extremely high and increases with the age of the patients [33].

To date, accumulated vast information on the etiology, pathogenesis, treatment, abdominal hernias. However, despite the long-term study of hernia - they are known since the time of Hippocrates - the problem of surgical treatment have not been exhausted, and to this day. This is due primarily to the results of surgical treatment of hernias, which are estimated, as a rule, the number of relapses. The number after the surgical treatment of general hospitals in a simple form of hernia is 15%, in the treatment of complex forms - 30% or more [29, 42, 49, 57, 74, 79, 101].

In specialized clinics herniological possible to reduce the number of recurrences of a few percent by a differentiated approach to the choice of method of hernia repair, the use of additional materials for the plastic abdominal wall [101, 109, 112]. However, in this case, the number of relapses in the average is 2%, and at long-term follow up to 6% [102].

Therefore, great efforts in studying the results of the implementation of new methods of operations, sutures, implants, etc., can not be achieved without recurrent postoperative period, 100% of hernia carriersey.

The problem of recurrent hernias includes a number of questions. One of them is the question of the etiology of hernias and, therefore, the choice of method

pathogenetically sound operation [7, 20, 21, 29, 38, 44, 62, 72, 79, 95, 101, 109, 133].

Role of increased intra-abdominal pressure these days to become more modest in the pathogenesis of the EAHs due increasing urbanization and mechanization of life, but the number hernia carriersey and the operation becomes smaller [16].

Numerous studies of the mechanism of formation of abdominal wall hernias revealed the importance of factors such as heredity, constitution, local structural features of the abdominal wall, the change in collagen metabolism, the activity of enzymes responsible for the exchange of components of connective tissue (CT) and other factors, hook or otherwise affecting the state ST [15, 56, 58, 60, 101, 135].

Currently one of the most pressing concepts linking the various manifestations of disease CT hernia, is the concept of connective tissue dysplasia (CTD), however, the literature value for CTD herniology not lit.

In the treatment of abdominal hernias wider.use mesh alloplastics [9, 10, 30, 37, 61, 103, 109, 112], which perform essentially the role of the anterior abdominal wall prosthesis and take over the functions of affected tissues. Distant morphological results using net allografts studied experimentally [8, 96, 137].

At the same time, we know that any scar tissue is defective in terms of functionality [44, 65, 107]. Possible negative impact on the state of the endoprosthesis surrounding tissues taught enough.

Thus, the problem of selecting the operation mode with the EAHs in the condition of the connective tissue in the body, the importance of studying the long-term results operations using mesh for hernia repair allografts defined purpose and objectives of this study.

The purpose of the study:

The purpose of this study is to improve the results of surgical treatment of external abdominal hernias by the rational choice method hernia carriers surgery in the light of changes in the connective tissue of the body.

Research objectives:

1. To study the phenotype of patients with various external abdominal hernias in order to identify the indirect signs of connective tissue dysplasia.
2. Determine the morphological features of the structure of external oblique aponeuroses and straight abdominal muscles, as well as the outer skin of patients with abdominal hernias.
3. Examine the nature of the relationship between indicators of phenotypic screening and morphological characteristic of aponeuroses of external oblique, rectus abdominis muscle and the skin of patients.
4. Morphological results of allografts in the experiment on the example of a polypropylene mesh prosthesis «Prolene» (ETHICON,. Belgium), given the state of periprosthetic connective tissue.
5. Develop guidelines for choosing pathogenetically sound way of surgery for external abdominal hernia with the signs of connective tissue dysplasia hernia carriers.

Scientific novelty:

For the first time with a comprehensive clinical and morphological study of the connective tissue in different types of external abdominal hernias.

Researched and documented dysplasia of connective tissue in different types of external abdominal hernias.

The interrelation between the clinical manifestations of disease of the connective tissue and the morphological changes of the aponeurosis and the skin of patients.

Morphological results of implantation of polypropylene mesh in the experiment with the position of dysplastic changes in the periprosthetic connective tissue.

The recommendations on the choice of the method of surgery for external abdominal hernias in the condition of connective tissue of the patient.

The basic position for the defense:

1. Connective tissue dysplasia detected in most patients with external abdominal

hernias, regardless of the version of pathology.

2. For the diagnosis of connective tissue dysplasia phenotype analysis insufficient patient must produce morphological study of connective tissue.

3. In the area of allograft fixation sutures observed morphological changes similar to those of connective tissue dysplasia.

4. The best way to have surgery hernia carriersey with indirect signs of connective tissue dysplasia should be considered preperitoneal allogernioplastiku.

The practical value of the work:

Data presented in this paper allow practical surgeons make informed choices are optimal for each patient treatment EAH. It is shown that the identification and registration CTD patient treatment EAH can improve both immediate and late results of hernia repair. Found that preperitoneal prosthetic abdominal wall - the best option for surgery in patients with CTD EAH.

Implementation of the work in practice:

Results of the study introduced into clinical practice II clinical TMA.

The structure and length of the thesis:

Thesis presented at the 81 pages of printed text, contains 10 tables, illustrated with 13 drawings. The thesis consists of an introduction, literature review, the characteristics of techniques and materials research, chapters describe the results of our research and discussion, findings, conclusions, guidelines and applications. Bibliography consists of 138 sources, and includes 82 works of national authors and 68 - foreign.

CHAPTER 1. MODERN CONCEPTS OF HERNIA OF ABDOMINAL WALL(literature review)

1.1. Herniology history.

The first mention of hernia is found in the Ebers Papyrus, written in about 1552, BC. The definition of "hernia" in this papyrus is given as "... the tumor formation, appearing on the surface of the abdomen as a result of coughing or straining."

Later, Hippocrates (460-377. BC) in his work «Corpus Hippocraticus», in "On the properties of different types of liquids" refers to the hernia and treats them as a form of dropsy. The Hippocratic Oath prohibits treatment of kidney stones and various vodyanok that perhaps explains the scant information about hernias in his writings.

A follower of Hippocrates Roman physician Celsus (first half of I century AD.) In his treatise "On the physician's practice" described the operation herniotomy for inguinal hernia, which told in details about the technique of intervention. It was mentioned how the bleeding, equipment selection of the spermatic cord, the risk of vascular injury "at the bottom of the testicle," because it can lead to necrosis. Celsus suggested transillumination scrotum for the differential diagnosis strangulated hernia and hydrocele. This is an example of a high-level surgery, based at the Alexandrian tradition [7, 41, 101].

The term "hernia" was first introduced Galen (129-199 years. BC) - one of the most eminent physicians of ancient Rome. Under hernia Galen knew going out entrails under the skin through a break in the anterior abdominal wall. [101]

Fall of the Roman Empire caused people to Europe achievements of ancient medicine. Treatment of hernias in the Middle Ages engaged barbers, healers who practiced such operations as otschemlenie scrotum with a hernia, scrotal otzhiganie whole part, while incarcerated hernia - cut infringes ring by herniotomy blindly bezrassecheniya soft tissues. Such actions lead to serious complications and, very often, the death of patients, so many countries have issued a decree banning herniorrhaphy. The best treatment for a hernia until the Renaissance was wearing bandages [7, 41, 101].

Save the experience of ancient medicine, scientists were able to Byzantine Empire,

the foremost of whom was Paul Agin (V century AD.). It not only codified existing medical knowledge by section, and laid the foundations of Arabic medicine. But Paul Agin as Galen saw fit removing the testicle with hernia repair. [101]

Another tank Greco-Roman heritage was a great Arab civilization. The great Arab surgeon Alunazis (quasi Abul al-Zahrawi, 1013-1106 gg.), Although based on the works of Galen and Paul agin, but I think removing the testicle with hernia repair impractical. Alunazis described treatments groin, inguinal-scrotal hernia, differential diagnosis of tumor formation in the umbilical region, a method of treatment of umbilical hernia. [101]

The Renaissance was a time of flourishing, including the arts and health. Ambroise Paré (1510-1590 gg.) Raised the surgery to the level of high art. In the famous work «The Apologie and Treatise» hernia he devotes an entire chapter, which describes in detail the technique of the operation and use tools. Wandering scholar condemned "gryzhesekov" that produced castration during herniotomy. A great contribution to the development of the book were herniology Pierre Franco «Traictdes Hennics», as well as the manuscript of Caspar Strohmeyer «Practicacopiosa» (1559), mainly devoted to the treatment of hernias, where the author first in the literature distinguishes between oblique and direct inguinal hernias. Removal of the testicle with hernia repair Caspar Strohmeyer allows only for oblique inguinal hernia. [101]

In Russia up to the XVII century, primarily engaged in the treatment of hernias charlatans and quack. In Russian villages charmed hernia was one of the most popular treatments for the disease. Particularly effective is "zagryzanie" ("biting") hernia, when the entire time you plot wise woman simulates bites. [41]

Further development herniology associated with better knowledge of the anatomy of abdominal wall. Studies by a number of authors have laid the foundations herniology as one of the areas of practical surgery.

N, Bidloo (1685) developed the principle of multi-layer structure of the abdominal wall, M. Poupert (1705) gave a description of the inguinal ligament. A. Littre (1770) described a Meckel diverticulum in the hernial sac. A. Scarpa in the book

«Treatise on Hernia» (1814) first introduced the concept of "sliding hernia", provides a detailed description of it, based on a study of autopsy material. AR Cooper (1804) described in detail the internal inguinal ring, the transverse fascia, inguinal canal, as well as a band, now called by his name. F.C. Hesselbaeh (1814) studied in detail the structure of the groin, tractus iliopubicus and described the naked muscles triangular space of the abdominal cavity - the "triangle Gesselbaha" [7, 41, 101].

However, despite significant progress anatomists, surgeons, and pathologists in the study of hernias, the results of surgical treatment were not as impressive. Mortality of patients was 60% or more (Danzel, 1854). It becomes clear why G. Dupuytren (1828) and F.P. Roux (1830) have expressed serious doubts about the validity but radical surgery for hernias. [41]

A new round of hernia surgery poluchast thanks to the emergence of analgesia (Wells N., 1844; Morton W., 1846; Simpson J.Y., 1847), as well as the introduction of the principles of aseptic and antiseptic (Lister J., 1865; Halsted W. S., 1896) [7]. Theoretical basis of this evolution were the fundamentals of AA Bobrov (1894), NV Epiphany (1901), N. Dyakonov (1901), RI Vepglovskogo (1903), L. Baratynsky (1912), PI Tikhon (1917) [21, 41, 101].

The first plastic surgery for inguinal hernia produced in 1885 L. Championier France. He highly bandaged and cuts the hernial sac, and then stitched the bottom edge of the inner "oblique and transverse abdominal muscles and the transverse fascia grafts dissected aponeurosis of external oblique muscle to the inguinal ligament over the spermatic cord. Russia made a similar operation for the first time in 1892, AA Bobrov year [7, 41, 101].

A breakthrough in the XIX century made herniology Italian surgeon B. Bassini, who in 1889 published his famous monograph «Nuova melodo per la cura radical dell'ernia inguinale», which, in fact, presented a unified concept of treatment of inguinal hernias. Suggestions put forward by means of plastic inguinal hernias - NI Kukudzhanova (1938), E. Sholdise (1945), McVay (1940), Postempski (1890) and others - are only a modification of the methods proposed by E. Bassini [7, 20, 21,

41, 64, 101, 109] .

To correct an umbilical hernia in 1898 Mauo and independently by Russian surgeon KM Sapezhko proposed to form duplikaturu aponeurosis. These methods are virtually unchanged and are used today [7, 20, 21, 41, 64, 101, 112].

Postoperative hernia surgery were discussed at the end of XIX century, with the beginning of the rapid development of abdominal surgery. Aptly LeTorre (1897) "... we are seeing so many post-operative hernias, as performed laparotomies" (quoted in Grubnik VV et al, 2001). [101] Postoperative hernia become one of the biggest problems herniology due to poor treatment outcomes.

In 1881, at a meeting in Moscow Surgical Society NV Sklifosovsky spoke on "herniation after ovariectomy." At the same time there were papers on the elimination of postoperative hernia. At the heart of many techniques - defect closure aponeurosis own tissues. [41]

Already at that time, the results of operations were evaluated by the number of relapses. Thus, in the inguinal hernia repair methods Roux and Czerny adult relapse reached 30%, more radical ways - Championier, Bassini, Girard, - given from 2 to 10% of recurrences [41].

Desire to reduce the trauma of surgery for hernia repair, enhance its reliability has led to the idea of strengthening the abdominal wall through a variety of fabrics and materials. This idea formed the basis of the so-called "not pull" methods in the treatment of hernias.

According to the great Theodore Billroth, "If it were possible to artificially create a fabric, the density and strength equal to the fascia and tendon, the secret of the radical cure of hernia would be found" (quoted in Zhebrovsky VV Ilchenko FN , 2004) [41].

We used a grid of different metals - gold (Francisco, 1890), silver (Witzel, 1900), stainless steel (Fieski, 1913, 1914, 1938), tantalum (Remine, White, 1945). However, because of the frequent complications of suppuration, fragmentation, divergence of implants, excessive tissue trauma from their use declined [119].

Of autologous and allogeneic use materials found autologous skin grafts

(Shilovtssv SP, 1953 Machabsli A.N, 1961 Midsummer VN, 1975, etc.), allogeneic transplants pericardium, fascia and dura (Eliseev H . T., 1970 Zyablov VI et al, 1975; Toskin KD, Zhebrovsky VV, 1984, etc.), but the wide distribution they received in the form of different reasons - rapid degradation in recipient organism, immune responses, instability with respect to the infection of the fence material, a large number of relapses [108, 119].

From the earliest synthetic materials used tires and rubber (Murray, 1906; Fieschi, 1914), later - polyethylene (Thomson, 1948), nylon (Shelyahovsky NV, 1955), ftorplast-4 (ND Danilenko, 1960) , Teflon (Olshanetsky AA, 1961), polyurethane foam (Vasilenko NS, Mukhoyedy SN 1962), Dacron (Brawlers, VM, 1963) [21, 101, 108, 119].

Most of the materials have been rejected because of their hydrolysis and biodegradation in the body, lung infection, rejection reactions, lack of mechanical strength, dimensional stability and flexibility [119].

New impetus was the opening herniology chemist Karl Ziegler and Giulio Natta in 1954 and the possibility of synthesis of polypropylene. Soon American surgeon F. Usher reported good results in the treatment of hernias using polypropylene mesh. J. Rives developed a method of hernia repair with the strengthening of the back wall of the inguinal canal dacron anterior approach. Strengthening the back wall of the inguinal canal using a synthetic graft is comparable in importance with the coup, perfect in the XIX century E. Bassini.

NZ Monaco (1959) in the book "Postoperative hernia" comes to the conclusion that plastic own tissues of large and giant postoperative and recurrent hernias - inefficient technique, and pays great attention to the problem of alloplastic synthetic materials [20, 21, 41, 101, 109].

There were reports of positive results from the application of mesh allografts, but problems have arisen and their use in herniology: accumulation of tissue fluid around the implant, abscess, allergic reaction, implant wrinkling resulting physiological contraction of scar adhesion in contact with the organs of the abdominal cavity and even inducing blastomatoznogo growth. Furthermore, the

use of allograft not eliminate 100% of the possible relapse hernia carriersey postoperatively [41, 80, 108, 119].

During the regeneration process when implanted synthetic mesh is not different from the usual [27, 80, 96, 103]. At the same time, we know that one of the forms of response against the introduction of a foreign body is chronic inflammation, in which the complex interactions are delayed-type hypersensitivity and granulomatosis [99].

Several authors have traced the changes in the implant and surrounding tissues in the experiment. The implant is encapsulated and grows scar tissue, like any foreign body. On close fit to the muscles, especially pripodshivaniy them, muscles develop degenerative processes with necrobiotic changes and subsequent degeneration in rubtsovuyi adipose tissue [41, 61, 80].

And implementation of new synthetic materials in hernia surgery helped to minimize the negative impact of the allograft to the surrounding tissues and the organism as a whole [7, 27, 30, 32, 41, 101, 109, 119].

At present, the greatest application in herniology got 3 synthetic material: polyester (Dacron), polypropylene (Strait, marleks) and formstability [101, 119].

L.M. Nyhus in 1959 suggested that extraperitoneal access to the back of the inguinal canal, which made it possible to close the hernial smack in recurrent inguinal hernias, leaving intact rubtsovoizmenennuyu front wall of the inguinal canal [41.101, 109]. Synthetic implants have been used in the treatment of intractable postoperative ventral and inguinal hernia - direct, oblique large and recurrent.

I. Lichtenstein (1986) proposed to strengthen the back wall of the inguinal canal with a synthetic prosthesis without any tension of tissues. By results of plastics in 1000 patients (1989), there was not a single recurrence [7, 101, 173]. Later there were some changes in the operative technique I. Lichtenstein (Gilbert A., 1992, FIR, Moscow, 1993; Darzi A., 1994, etc.). [7]

Laparoscopic hernioplasty began development in 1982, when R. Ger first realized such intervention. L. Shultz and J. D. Corbitt (1990) independently attempted

prosthesis hernial defects, establishing "zallaty" from the grid in the preperitoneal space. ME Arregui (1991) first reported on their experience of laparoscopic preperitoneal prosthesis similar to that of Stoppa and Nyhus. J. Corbit and A. Seid (1995) reported a recurrence after laparoscopic hernia repair on metodikeShultz resulting from inadequate area reconstruction groin area [7, 38, 41, 101, 109].

Relatively high cost, the need for a requirement for anesthesia, and the relatively rare but serious complications limit the use of laparoscopic techniques.

Thus, herniology today is a section of abdominal surgery with evidence-based, high-tech and effective treatment of hernias. Major trends are the use herniology not pull treatments, the use of laparoscopic techniques, the search for improved synthetic materials for hernia repair to reduce the recurrence of hernias, the number of postoperative complications.

1.2. Views on the etiopathogenesis of education outside abdominal hernias.

Herniology, after a long and difficult way of development, has absorbed tremendous knowledge of the etiology and pathogenesis of hernia disease. During this time, some theories of hernias lost relevance, others received a new dimension in the light of new medical knowledge.

So, passed away abdominal trauma theory (Hippocrates, IV century BC), the overflow of the intestine (PraxagorasofCos, 400 BC. Oe.), "Saccular" theory of innate bag (Galen), the concept of education as a result of a hernia loss of internal organs location in the abdomen due to the weakness of ligaments (Petit, XVII century), the assumption of the roles of preperitoneal hernia fat and lipomas (Roser, 1834; Linhart, 1881). [41]

Traumatic theory of the formation of inguinal hernia has long been dominant. One of the first in its solvency questioned Vallescode Taranta (XIV century). Inguinal hernia treated them as a separate disease abdominal wall caused by a hereditary failure of tissues. This situation has become very relevant today, as will be discussed in the next section.

In papers Rencrulin (1721) and Gunz (1744) claim that the hernia is primarily a

rise in intra-abdominal pressure (IAP), and not injury. Authors, speaking about the protective role of the abdominal muscles in the pathogenesis of herniation, laying the foundations of modern biomechanics of the anterior abdominal wall.

Pathogenesis herniation complicated, it is necessary to consider many factors. During the XIX century, formed of the causes of abdominal wall hernias, which have become classics of today.

According to AP Krymov (1929), and others, causes of hernia should be divided into general and local, and overall, in turn predispose to and producing. Predisposing factors include age, sex, constitution, depletion, obesity, relaxation of ligament-muscular system, the change of the internal organs of the abdomen and inheritance [64, 112].

By inheritance means that there is a hernia with relatives, but it should be seen as the floor, the Constitution, and, perhaps, certain structural features of the abdominal wall are transmitted with genetic material.

By producing reasons include factors of the disease that improve WBD. It is a violation of the dynamic equilibrium between IAP and abdominal wall resistance is the cause of a hernia. Due to a significant increase WBD exertion many authors to play a central role [64, 70, 133].

It is believed that 60-80% of hernias are formed by persons engaged in heavy physical labor (Tikhov P., 1914). VV Gorinsvskaya other hirurgiotnosili hernia to occupational diseases ("disease movers").

Various authors point to a significant percentage of those engaged in hard physical labor of hernia carriersey. However, the proportion of them, according to various sources varies. For example, VR Khesin (1927) reported 19.6% of manual workers in patients with inguinal hernias, LM Butuzov (1934) - about 86.9%, AI Baryshnikov (1961) - about 60.2%. According to the IA Golyanitskogo (1925) longshoremen suffered a hernia in 18.8%, PI Michalke (1927) revealed the presence of heavy physical labor hernia carriersey 60% [15].

Currently, the role of increased IAP in the pathogenesis of Education EAH become more modest. Urbanization, mechanization led to significant reduce the severity of

physical labor. Hernia carriersey number and the operations being produced in this country is relatively stable [70].

The original analysis of the publications of the largest English-language medical resources Medline, meet the following PO Hendry, S. Paterson-Browna, A. de Beauxa (2008) showed that of the 268 articles, only 59 meet the interests of the search-relationship between physical activity, IAP and inguinal hernias, including recurrences, indicating that the search for new links in the etiology, and: pathogenesis abdominal hernias. The authors suggest that congenital or acquired weakness of CT makes an appearance hernia virtually irreversible.

NI Kukudzhanov (1969) considered an important etiologic factor in prolonged tension of the abdominal wall, causing pressure in the most "weak points" [58].

The weak points of the abdominal wall II Bulynin (1968) refers to congenital and acquired defects of the anterior abdominal wall in a cleft of the peritoneum, the appendix inguinal, umbilical ring; expansion inguinal and femoral canal, the hole on the white lines and spigelievyh, hypoplasia of the muscles of the abdominal wall, as well as post-operative and post-traumatic defects. The author suggests that birth defects of the abdominal wall can be inherited. [15]

The fact that some anomalies of abdominal wall can be inherited, it is proved the appearance of hernia at birth or in the neonatal period. EE Peacocketal. (1978) reported a congenital umbilical hernia, available to the 20% of blacks and 5% of children born in the family of the Caucasian peoples. [101]

Watson (1938) reported that a quarter of his patients with inguinal hernias have relatives with similar hernias [198].

The absence of a hernia - does not guarantee the absence of disease of the abdominal wall. Thus, W. I-Iughson (1925) found a cleft processus vaginalis in 20% of individuals without any clinical signs of herniation in life. I underwent hernia repair on the oblique inguinal hernia in 20% of cases, there is cleft processus vaginalis on the opposite side of the operation. Similar results achieved VL Yarygin, AP commit, Todrik AG (1994) [133], it is also suggested A. Nesterenko, Salov JB (1981). [79]

According G.R. Tobin et al (1976) the emergence of oblique inguinal hernia possible for violating obliteration processus vaginalis, which leads to the existence of the communication between the abdominal cavity and the scrotum in men and Nuka channel - for women.

Several authors have concluded about the importance of constitutional factors herniation (Shevkunenko VN, 1927 Sozonov Yaroshevich-AY, 1927 Chernorutskii MV, 1927 IF Berezin, 1931 Serzhanin AI ., 1935, etc.) However, their data are inconsistent. Thus, according to the observations of SN Lschinskogo (1894), ALO. Sozonov-Yaroshepicha (1930), N. Kukudzhanova (1969) oblique inguinal hernias are more common in individuals asthenic type, direct - persons hypersthenic body type. Research as TF Laurel (1979) showed that both direct and oblique hernia often formed in individuals hypersthenic body type, which is characterized by "anatomical confusion" groin area [15, 58, 60].

KD Toskin, VV Zhebrovsky (1983) point out that the mere body type is not critical predisposing factor, but only a few people, regardless of body type, a true constitutional predisposition to the formation of a hernia due to congenital weakness of CT [112].

Another possible cause of the external abdominal hernias, in this case the right-groin is appendectomy [6, 101, 134]. Damage to the segmental nerves that innervate the muscles of the right groin, reduces the protective role of anterior abdominal wall closure due to lack of internal inguinal ring at the voltage of the abdominal muscles, cough [132].

Education and postoperative recurrent hernia is often interpreted as a consequence of incorrect actions surgery, postoperative complications (festering wound, hematoma), early physical activity [7, 10, 11, 29, 41, 42, 49, 57, 74, 79, 85, 101 , 109, 115]. However, these hernias detected after operations performed in different clinics, different, including highly skilled surgeons, with almost the same frequency [70]. This suggests that a certain cohort of patients, there is weakness of the connective tissue structures of the abdomen.

Thus, at this stage have an idea of the anterior abdominal wall hernias as a result of

violation of the dynamic balance between increased IAP and the ability of the abdominal wall to resist him. And the important point is the presence of congenital or acquired defects of mesenchymal origin structures (muscles, fascia, aponeurosis, expansion of the inguinal and femoral canal, etc.) the anterior abdominal wall.

There is a question about the role of CT pathology, not the last, in the mechanism of herniation.

1.3. The role of the pathology of connective tissue and the formation of abdominal wall hernias.

Study of the relationship between the condition of the patient and CT hernia for many years was empirical.

Many surgeons in the description of the anterior abdominal wall hernias, take into account the state of the local tissues immediately surrounding the hernial protrusion, and the presence of diseases, conditions that are more or less due to the weakness of the connective tissue structures of the body.

Cooper back in 1804 marked the transverse abdominal fascia, to a greater extent than muscle, the last obstacle to the emergence of an inguinal hernia, but his contemporaries, this message was ignored.

VV Gorineiskaya, EF Drevin, MA Landa (1927) indicate the presence of a hernia patients relaxation of ligament-muscular system, but believe it is the result of "professional burdening" [15].

NI Kukudzhanov (1969) is considered one of the causes of hernias relaxation of ligament-muscular person, depending on age and employment factors and harmful external influences. [58]

TF Lavrov (1979) concludes that available in some patients with hernias reduced strength of "weak" areas of the anterior abdominal wall, which may be congenital or acquired. Role of increased intra-abdominal pressure, 90% of children and 20% of adults could not be determined. [60]

KD Toskin, VV Zhebrovsky (1990), speaking of inguinal hernias in children

indicate that the latter is a "manifestation of mesenchymal failure ... with varying degrees of prevalence and severity of the dysplastic process ". [112]

Recently, a growing interest in the biochemical and structural aspects herniology whose study led to the discovery of the molecular and cellular structures in the fascia and collagen tissue, which normally prevent the occurrence of hernia. Collagen is the main element of the fascia and aponeurosis of the human body. Numerous studies focus on pathology of collagen metabolism by external abdominal hernias.

Several centuries ago, some doctors noticed that the sailors long at sea, developed scurvy. Along with general weakness, bleeding gums, periosteal pain, many had hernia diverged old scars. It was only recently clarified the role of vitamin C in the synthesis of collagen, which allowed to explain the symptoms [101] ZT Wirtschafter and J.P. Bentley (1964) first reported the occurrence of abdominal hernias in rats injected with latirogeny,-disrupting substances exchange collagen. The authors also pointed to the increasing occurrence of hernias in patients with latirizmom.

EE Peacock in 1984, discovered the grave violations of local collagen synthesis in patients with recurrent unilateral inguinal hernias. Changes related to the acceleration of collagen synthesis on the side of hernia, which is interpreted by the author as a possible mechanism of relapse. These studies suggest that the local collagen metabolism may influence the development of hernias.

S.A. Antoniou et al. (2009) showed the role of matrix metalloproteinases (MMPs) in the genesis of the external abdominal hernias. These specific enzymes are responsible for the re modeling (ie degradation or proteolysis) of collagen fibers of the extracellular matrix [111, 128]. Authors vvyavilisilnuyu correlation between MMP-2 and direct inguinal hernias, mezhduMMR-1 and MMP-13 and recurrent hernias.

I. Abci, S. Bilgi, A. Altan (2005) found a decrease in the activity of tissue inhibitor of MMP-2 (Timra-2) in patients with direct inguinal hernias, this leads to an increase in MMP-2 in the tissues, and indirectly causes a violation of collagen

synthesis [135].

YI Torshin, OA Gromov (2008), considering the phenomenology of exchange PT, point to the influence of cations magnesium and zinc on the activity of enzymes involved in the synthesis of fiber matrix PT. Reducing the concentration of these micronutrients can cause impaired synthesis of matrix fibers, increase collagenase activity, and, as a consequence, the deterioration of the mechanical properties of connective tissue structures. [111] Presented mechanism can also serve as a link in the complex mechanism of herniation.

L.T. Sorensen et al. (2005) have shown that smoking increases the risk of relapse of patients inguinal hernia due to changes in metabolism PT. Also increases the risk of a hernia after laparotomy in 4-fold compared to non-smokers. Smoking plays an important role among the risk factors for postoperative hernias, along with post-operative wound complications, age and male gender.

R. Roschetal. (2003) conclude that CT studies of metabolism and, in particular collagen, will optimize methods of surgical treatment of patients.

An association between abdominal hernias and some diseases, which are based on the weakness of CT.

So, Abramsonetal. (1978) noted that the incidence of hernias in patients with varicose veins and hemorrhoids are significantly higher than in the population [122].

According to KA Halletal. (2000) and postoperative recurrent abdominal hernias are more common in patients with abdominal aortic aneurysm than with obliterating diseases of the aorta [134]. Similar relationship between abdominal aortic aneurysm, and other external inguinal hernias belly revealed Musellactal. (2001) [139]. B. and F. Lchnert Wadouh (2005) found that inguinal hernias are more often in patients with aortic aneurysm than with obliterative vascular disease and coronary atherosclerosis [131].

Thus, many authors have somehow affected the state of CT in the consideration of the causes of the external abdominal hernias. These changes affect not only the connective tissue structures, "responsible" for the occurrence of hernia, and the

state of CT in the body as a whole. All this points to the possibility of considering external abdominal hernias, first of all, as a sign of weakness in the body CT.

1.4. Dysplasia - the connective tissue of the new nosological approach herniology.

Today, one of the most relevant approaches to the pathology of the CT and its role in the pathogenesis of many independent diseases, including diseases of hernia, is the concept of connective tissue dysplasia (CTD) [17, 45, 66, 68, 71, 73, 75, 113, 120, 122, 126, 128, 130].

According to V. Serov and A.B. Schechter, "it is difficult to name the disease process or public entities that ... at which the change in the connective tissue would not play any role "[99].

According to current data, CT - is very difficult to design a system, which is an essential component of collagen, elastin and reticular dragged, proteoglycans, cells, numerous enzymes that regulate the exchange PT. The main distinguishing feature of the ST from other tissues is the prevalence of fibrous structures with a small number of cells. That fiber determine the basic mechanical properties of the CT [111, 129].

Development of histology, biochemistry, genetics, in the XX century it possible to study the structure and function of CT in health and disease [129]. Parallel forms of the role of CT in the pathogenesis of various diseases [99].

The role of CT in hereditary diseases with joint hypermobility (SMS) as a leading manifestation interested in the XIX century [121, 128].

In the 20's of last century domestic physiologist AA Pilgrim said that human health, the formation of the disease depends on the state ST, which has many functions. AA Pilgrim (1926) believed that the constitution should distinguish between types of development PT and isolated mesenchymal, fibrous, pasty, lipomatous types of constitutions. [17]

Ms Kustck in 1955 identified a group of genetic disorders ST and skeleton. By the time she was treated only certain nosological forms: osteogenesis imperfecta,

Marfan syndrome, Ehlers-Danlos syndrome, elastic and pseudoxanthoma gargoilism. They are based on - gross genetic defects of collagen metabolism, elastin, Mucopolysaccharides. They are accompanied by vivid clinical picture, with other manifestations of the patients met the external abdominal hernia [132].

However, clinicians are regularly seen patients who have the structural non-inflammatory lesion of individual organs or systems that do not fit into the known diseases CT, often innate or manifested at a young age [75, 76].

T. Milkovsky-Dimitrov et al (1987) termed "innate inferiority of connective tissue" special status of children, in which they have no deviations in the physical and mental development, but differ from other children increased flexibility and plasticity [71].

P. Beighton (1988) suggested that the inherent pathology ST denote the term "dysplasia" (Greek dys - violation and plaseo - generators) [120, 121]. Glesby et al. (1989) proposed the abbreviation «MASS» - (from the English. Mitral valve, aorta, skeleton, skin), - to characterize the clinical entities of the disease, temporarily taking place in the classification of hereditary diseases PT.

And other designations offered CTD - "CTD mixed phenotype", "mesenchymal deficiency syndrome", "small forms of dysplasia," "mild, generalized pathology," "syndrome CTD", "generalized CTD, including MASS-phenotype", etc . [43, 46]. Absence for a long time the standard classification CTD reflects the complexity of the problem and different views of researchers to bear [120].

In Soviet literature the most common is the term "connective tissue dysplasia," proposed by DN Barrel (1983), GI Storozhakovym (1983) [75, 120].

CTD is a problem in recent years great interest in connection with an increase in the detection of this disease in patients [91]. Syndrome detection rate of CTD is large enough - 26 to 80% depending on the group and research methods [43, 46, 91].

In the development of the leading role of CTD have mutations in the genes coding for the synthesis of collagen and spatial organization, responsible for the formation of the matrix components, as well as enzymes involved in the process of

fibrillogenesis [46, 129].

It should be added that the properties of CT in general and collagen as its main structural protein in particular, can change with age. This is the inevitable consequence of the aging process [48, 50]. In this case, if the CTD and unfavorable factors of ontogeny may worsen existing pathological states.

Dysplastic changes may be due to adverse environmental conditions, inadequate nutrition and stress. [46] For example, the variability of the phenotype in the syndrome of Ehlers-Danlos syndrome is caused by defects in genes only in 11.5% of cases, and in others associated with the action of environmental factors [142]. There is evidence of the role in the formation of CTD violation magnesium metabolism in the body: magnesium deficiency is confirmed in primary mitral valve prolapse (MVP). [111]

Different actors can detect symptoms of CTD in different combinations and different degrees of severity. Each clinical case is dominated by the change of a system of bodies, which required a comprehensive diagnosis, using clinical history, laboratory and imaging studies [17, 45, 47, 52, 53, 66, 68, 71, 75, 76, 111, 120].

Many symptoms CTD - myopia, flat feet, varicose veins, biliary dyskinesia, scoliosis, herniated stomach - are synonymous diagnosis. Other manifestations - asthenic constitution, muscular hypotonia, epikant, telangiectasia on the face and back, and so on - are descriptive in nature and are not included in the clinical work [76, 128].

In 1985 T-Milkovsky Dmitrov and L. Karkashevym proposed diagnostic scheme of CTD. Under this scheme, assesses whether the patient primary and secondary CTD [71].

The main features include:

- flat feet;
- veins;
- arched palate;
- joint hypermobility syndrome;
- pathology of the vision;

- deformation of the chest and spine;
- Increased elasticity and sagging skin;
- long marshy fingers.

Secondary signs: anomalies of ears and teeth, joint pain, sprains and joint subluxation, pterigodaktilya and others emphasize that this large group includes, among other minor symptoms and abdominal hernia [17, 45, 47, 52, 66, 68, 75, 76, 111, 120].

The degree of severity is determined by the choice of CTD combination of major and minor characters. This technique allows to distinguish three groups of patients, depending on the severity of the CTD, - mild, moderate and severe. [71]

Between the number of external phenotypic features and dysplasia detection rate similar visceral manifestations, there is a direct relationship [43].

There are other schemes diagnostic CTD. They abdominal hernia occupy a different place in importance for diagnosis.

Thus, AI Martynov, OV Stepura, OD Ostroumova (1996) identify the 10 most important features of CTD, including no place for hernia [66]. T. Smolnova et al (2003) use a ball-assessment CTD, odnosyagryzhi severe manifestations of dysplasia [120]. AS Kalmykov, TS Gerasimov, EV Streltsov (2005) also provide a hernia is the highest score among the other CTD along with dysplasia of the hip, spine kyphosis, strephexopodia [47].

In recent years a growing interest herniology to abdominal hernia is a manifestation of undifferentiated CTD [39, 40, 70, 86, 125].

So EG Ershov (2008) points to the paucity of information on the prevalence of symptoms of CTD hernia carriersey. According to his data of 148 patients hernia carriersey only one of the CTD revealed 30 (20.27%), with two 43 (29.05%), three or more in 75 (50.7%). The author comes to the conclusion that the required accounting hernia carriersey CTD at hernia carriersey and preferable not pull technique using synthetic grafts in the treatment [39, 40].

AS Piskunov, VN Repin, IM Tkachenko (2009), found that patients with bilateral and recurrent inguinal hernias CTD markers detected significantly more frequently

than in patients with unilateral inguinal hernias [86].

SG Shapovalyants, AP Ettinger, ST. Free (2009) found a correlation between the anterior abdominal wall hernias and abnormal ratio of collagen types I and III. In the control group of patients troubled by the above ratio "was 48% among patients with unilateral hernias - to 58%, and in patients with recurrent hernias their number reached 98% [125].

NN Milica, JD Toropov, KN Milica (2009) propose to distinguish between "hernia" and "hernial disease." According to them, hernia - it is clinically defined bulging abdominal defect in the aponeurosis, and hernial disease - a systemic disease of CT [70].

Reports of communications and external CTD abdominal hernias are now increasingly common, it can be concluded about the importance of further study of the issue.

There are now also investigate the impact of CTD on the development of various diseases, such as cardiovascular disease and pathology of the blood [26, 43, 46, 47, 63, 67, 68, 91, 94, 105, 113, 114, 122, 123, 132], respiratory disease [35, 78], gastrointestinal disease [19, 51, 73, 83], mochevyvodyashey systems [54, 94, 123], it turns out the role of CTD in obstetrics and gynecology [18, 34, 76, 120] , Pediatrics [54, 66], orthopedics [52], endocrinology [124], immunology [132].

Thus, in the XX century with the development of the morphology and biochemistry were confirmed by rigorous scientific methods of long-term supervision of surgeons regarding the relationship between the state of CT of the patient and the presence of his abdominal hernia. The concept of connective tissue dysplasia oformlyaetpodchas anecdotal evidence of connective tissue disease in one coherent theory. However, to create a unified picture of this issue, and in herniology in particular, there is still a lot.

1.5. Methods of treatment of ventral hernias.

There are no other ways to treat hernias, except operational procedures. The use of different types of bands can only briefly delay the onset of disease and delay the

time of the operation.

Cover all the currently available methods of surgical treatment of external ventral hernia is almost impossible. However, there are two fundamentally different approaches to the treatment of external abdominal hernias of any location:

1. hernioplasty with local fabrics, or "tension" hernioplasty;
2. hernioplasty using polymer mesh allografts, or "not pull" atenzionnuyu hernioplasty.

Postoperative (POVH) and recurrent ventral hernias (RVH) - not only surgical problem, but also a special condition of the body [37, 109]. In addressing these hernias as inguinal, in recent years there has been an evolution from plastic hernial ring local tissues [4, 5, 7, 15, 20, 21, 41, 56, 61, 64, 101, 109] to the closure of the defect with polymer mesh stents [7, 9, 12, 23, 27, 30, 32, 41, 69, 88, 92, 96, 100, 104, 109, 132, 137].

The location of the implants in this case may be:

- Withaboveaponeurotic fixation prosthesis (procedure onlay);
- with preperitoneal prosthesis fixation (method sublay);
- with intramuscular implant fixation [77, 109].

Aboveaponeuroticmesh fixation is technically easy, but at the expense of the general otseparovki subcutaneous aponeurosis from a cavity, where it is easy formed hematoma and seroma - to 47.6%. [109] This arrangement of the mesh implant is about 20% of cases require a long post-operative treatment by drainage and puncture fluid cavity formation [77]. In this case, intra-abdominal pressure is applied to the prosthesis through the hernia defect, raises it above the peritoneum (Fig. 1) [7, 41, 101, 109].

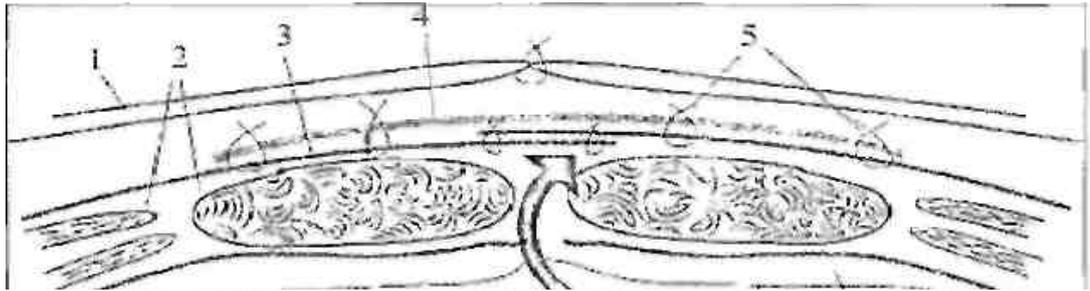


Fig.1. Above aponeurotic mesh implant location (scheme). The arrow indicates the effect of intra-abdominal pressure on the grid through the hernia defect. 1 - Skin 2 - direct, external and internal obliques, 3 - aponeurosis 4 - mesh implant, 5 - Fixing the mesh seams, 6 - preperitoneal space, 7 - peritoneum.

Preperitoneal prosthesis fixation is considered one of the most reliable, which is provided to the implant is firmly pressed against the abdominal wall by abdominal pressure. The load in the first place does not lie on the duplication of the aponeurosis and fixing seams, and on a grid (Fig. 2) [77, 81, 109]. Unfortunately, it is not always possible to separate the rear leaf of the rectus sheath of the peritoneum, which limits the use of this technique [77].

The above principles used for treatment of postoperative abdominal hernias are also valid for umbilical hernia, a white line of the abdomen, and lunates pigellievoy lines [37, 41, 109].

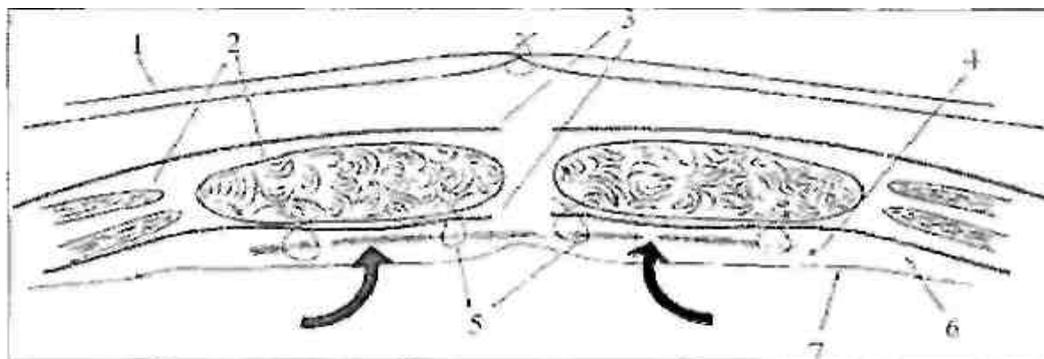


Fig.2. Preperitoneal mesh implant location (scheme). The arrows show the effect of intra-abdominal pressure on the grid. 1 - Skin 2 - direct, external and internal obliques, 3 - aponeurosis 4 - mesh implant, 5 - Fixing the mesh seams, 6 -

preperitoneal space, 7-peritoneum.

Thus, in use for the treatment of hernia methods over the past 10-15 years, noted a gradual evolution. The main change is that states that the principle of treatment of tension-free tissue is used to close the hernia mesh gates developing laparoscopic hernia surgery.

CHAPTER 2. MATERIALS AND METHODS

2.1. Characteristics of the groups of patients

The clinical part of the work is based on the Department of Surgery II clinical TMA. In the period from September 2009 to May 2012.

A total of 90 patients, of which the core group included 48 hernia carriers with external abdominal hernias at various locations. All hernia carriers operated on the basis of surgical departments II clinical TMA.

The control group consisted of 42 patients with various, including urgent pathology of the gastrointestinal tract and injuries of the musculoskeletal system of

various locations. Hernia carriers acted in a planned manner and in an emergency on the strangulated hernia.

All hernia carriers educated about existing methods of operations for external abdominal hernias, possible complications, especially postoperative course, and then gave written consent for surgery.

The criterion for inclusion in the study were the main group of voluntary informed consent for the study, the presence of the outer ventral hernia in the control group, on the contrary - the lack of ventral hernias at the time of treatment and medical history.

Exclusion criteria for both groups is a chronic debilitating disease (tuberculosis, cancer) receiving corticosteroids, systemic diseases PT.

Preoperative evaluation of patients included a major general clinical research methods: laboratory (complete blood count, urinalysis, blood chemistry, coagulation, blood type and Rh factor), instrumental (ultrasound of the abdomen, fibrogastroduodenoscopy, ECG, ultrasound of the heart). In addition, the CTD revealed on questioning, examination, consultation of experts.

For each patient filled a specially designed protocol, which the data was entered medical history, examination, specialist referrals, the results of our in-depth survey [see Application].

In explaining the family history clarified the presence of relatives of the 1st-degree relatives (father, mother, brothers, sisters, children) ventral hernias and other forms of FTA: varicose veins of the lower extremities, myopia, scoliosis, hemorrhoids.

Refined employment history. All patients according to the severity of physical labor were divided into 3 groups. [31].

The first group of patients, track and physical labor. This is a person whose work is performed while sitting, standing or associated with walking, but without systematic voltage without lifting and carrying of goods.

The second group - patients engaged in physical labor moderate, who deal with the constant walking and carrying small (up to 10 kg) weights, and performed standing.

The third group - patients, engaged in hard physical labor, the work of which is related to the systematic physical stress, as well as the constant movement and carrying large (over 10 kg) weight [22, 24].

Regular practice of power sports with predominantly anaerobic loads (eg, bodybuilders) are considered as an additional risk factor for increased intra-abdominal pressure of KGZH.

Predominantly aerobic exercise in sporting activities (running, gymnastics, aerobics, swimming, and so-called) as an additional risk factor for the occurrence of the EAHs were not considered.

Weight was measured to the nearest 100 g using floor scales in the morning on an empty stomach after bowel and bladder.

Height was measured using a stadiometer with the natural posture of the patient, in a situation in which the back, buttocks and heels to the measurement rail.

Calculated the body mass index (BMI) by

m

BMI = -----,

h²

where m - weight in kilograms, h - height in meters. Parameters of the normal values and the deviation from the norm was determined according to general recommendations adopted by the WHO (1997).

Chest circumference measuring tape measured during quiet breathing patient.

The length of the brush determines measuring tape along the back of the hand from the projection of the styloid points (styloid process of the radius) to continue the third metacarpal bone to the most distal point of the nail phalanx of the third finger.

Foot length and height of its vault was measured with a caliper in millimeters in the patient's "standing." The length of the foot - from the coccyx 1st finger to the back of the heel of the circle, the height of the foot - from the floor to the top surface of the navicular bone.

Among the study group patients were 64 men (64 ± 4,8%), women - 36 (36 ±

4,8%). Age of patients ranged from 21 to 68 years, mean age $56,6 \pm 11,7$ years. Significant differences but age, sex, weight, BMI, when comparing treatment groups were found (Table 1).

Table 1

Comparative characteristics of baseline patients ($M \pm m\%$)

The main indicators	Groups of patients		P
	Main group, (n=48)	The control group (n=42)	
Mean age, years	51,6±14,6	53,9±14	p>0,05
By sex ratio M:W	28:20 (1,61)	22:20(1,15)	p>0,05
Mean body weight, kg	82,96±15,5	83,5±16,7	p>0,05
BMI, kg/m ²	29,1±6,3	28,1 ±4,9	p>0,05

In both groups there were patients who have a history of one or more operations on abdominal organs. The nature of the operations previously carried out in each group is presented in Table 2.

Table 2

A history of surgeries and their character ($M \pm m\%$)

Nature of operation	Groups of patients				p
	Main group, (n=48)		Control group, (n=42)		
	abs.	%	abs.	%	
Hernioplasty	14	14±3,5	0	0	p<0,01
Appendectomy	9	9±2,9	1	10±5,5	-
Operations on helchevyvodyashchy ways	6	6±2,4	2	6,7±4,6	-
Stomach operations	2	2±1,4	0	0	-
Bone and backbone operations	2	2±1,4	1	3,3±3	-

Operations on bodies of a small basin	8	8±2,7	2	6,7±4,6	-
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The distribution of patients in the study group, depending on the type and location of hernias presented in Table.3.

Table 3

The frequency of the external abdominal hernias in the main study group,

$$n = 100(M \pm m)$$

Types of hernias	Number of cases	Frequency occurrences,
Inguinal, including recurrent	56	56±5,0
The umbilical	14	14±3,5
Postoperative ventral hernias	12	12±3,3
Recurrent ventral hernias	6	6±2,4
White line of a stomach	3	3±1,7
The femoral	2	2±1,4
Hernias of the combined localization, including with diastases of direct muscles	7	7±2,6

Of inguinal hernia (n = 56) was 49-sided ($87,5 \pm 4,4\%$), bilateral - 7 ($12,5 * 4,4\%$), recurrent - 6 ($10,7 \pm 4,1\%$). In one case there was a vrozhdeshgaya oblique inguinal hernia (hernia carriersstva duration 20 years).

Hernia associated localizations were 7 cases ($7 \pm 2,6\%$); of whom two patients had diastasis recti combined with umbilical (1 case) and recurrent ventral (1 case), hernias, 2 patients had a combination of location and POVG inguinal hernia (in one case - recidivism), 1 patient - POVG and umbilical hernia, 1 patient had a combination of bilateral and umbilical hernia, while another one - and periomphalic umbilical hernia.

Strangulated hernia accounted for 12% of the total number of observations, and inguinal hernia infringed often than umbilical ($0,01 < p < 0,05$), recurrent ventral hernias ($= 1,534; 0d > p > 0,05$) and POVG ($tc^1, 678, 0,1 > p > 0,05$) (Table 4).

Table 4

The frequency of the external abdominal hernias infringement

Types of EAH	Number of cases	Frequency infringements,%
The inguinal (n=55)	2	3,6±2,5
The umbilical (n=14)	4	28,6±12
White line of a stomach (n=3)	1	33,3±27,1
PVH(n=12)	3	25±12,5
RVH(n=6)	2	33,3±19,2

Of comorbidities in both the main and control groups the most common diseases of the cardiovascular system and the musculoskeletal system (Table 5). In general, the differences in these indicators in the two groups was not.

Table 5

Comorbidities in the study and control groups

Accompanying diseases	Groups of patients				P
	Main group, (n=48)		Control group, (n=42)		
	ābc	%	ābc.	%	
The cardiovascular Systems	73	73	18	60	p>0,05
Musculoskeletal device	24	24	7	23,3	p>0,05
Respiratory system	11	11	1	3,3	p>0,05
Gastrointestinal path	18	18	5	16,7	p>0,05
Urinogenital system	35	35	8	26,7	p>0,05

2.2 Methods of examination of the patient to identify the indirect signs of

connective tissue dysplasia

Verification carried out by CTD internal and external phenotypic traits. External phenotypic traits identified by physical examination, internal - according to endoscopic methods, functional and ultrasound diagnostics and specialist referrals. For signs of CTD scheme applies T. Milkovsky-Dimitrova and Karkasheva A. (1987). [71]

HMS recorded on P. Bcighton (1973) with the assessment of severity on a 9-point scale. The criteria were: 1) passive extension V thumb at 90 °; 2) passive flexion of one thumb in the direction of the forearm flexion in the wrist joint and the finger touches the forearm, 3) rekurvatsiya elbow above 10 °; 4) rekurvatsiya knee over 10 °; 5) bending forward at fixed knee joints, with the palms reach the floor. A positive result was considered as the ability to perform the first two tests in history. Rekurvatsiyu joint was determined by medical protractor by conventional methods. The results were evaluated in points: 1 point - a pathological hyperextension on one side of a single joint. The maximum value of the index, given the two-way location, - 9 points (8 - for the first 4 points and 1 - for the 5th paragraph). Figure 3 to 9 points is considered as a state of hypermobility to 2 points - both are normal.

The presence of arachnodactyly established by tests wrist and thumb. Positive test was considered possible wrist wrap wrist of one hand the patient's thumb and little finger of the other hand, their terminal phalanges are imposed on each other. Positive test thumb fixation believed it across the palm without help, with the phalanx of the thumb nail beyond the ulnar edge of the palm.

Longitudinal arches were evaluated using the Frinlyanda (1968), determined podometric index (PI). $PI = (\text{stack height} / \text{length of the foot}) \cdot 100\%$. Normal arch index was within 31 -29%, the index in the range of 29-25% was regarded as a set of low-flat, less than 25% - expressed flatfoot.

Transverse arches were recorded at identifying Halluxvalgus. For the 1 st degree deviation I took Halluxvalgus toe laterally at 10-19 °, for the 2nd degree - for at 20-29 °, for the third - by 30-49 °, for 4 th - 50 ° and more.

Nontraumatic pathology as a marker DS'G spine (scoliosis, "straight back"

giperkifoz thoracic, lumbar hyperlordosis) detected by the method of the Central Institute of Traumatology and Orthopedics. NN Priorova. Deformation of the chest (funnel, pigeon) was determined pokriteriyam VK Urmonasa Kondrashiia and NI (1958) [Software]. Refractive error by myopia, hyperopia, astigmatism identified in the survey and on the basis of consultations ophthalmologist.

The presence of varicose veins of the lower extremities were determined by physical examination by conventional criteria.

High ("Gothic") was defined as the presence of the sky sharp angle at the top of his external examination. Epikant, adnate earlobes, tenderness or velvety skin, the presence of telangiectasias on the face and back, multiple moles on the body revealed by external examination, an abnormal growth of the teeth (crowding, multiple caries) - on questioning and physical examination.

Saddle nose (rinolordoz) diagnosed with deformations of the external nose to the presence of depression in the middle of the back.

The wide flow is determined by measuring the maximum distance between caliper edges pyriform aperture and wide noseband took away more than 25.5 mm in women and 26.5 mm in men. [31]

Deviated septum, the presence of prolapse, hemorrhoids are recorded based on the conclusions of specialists filed outpatient medical record, as well as the questioning of patients.

For the diagnosis of protruding ears, measured the distance from the skin of the mastoid process to the lateral edge of the ear helix, the value of more than 2.5 cm was regarded as droopy ears. [87]

Giperelastichnost skin determined by criteria GA Sukhanova (1993), evaluated the opportunity to form a fold of skin over the lateral end of the clavicle width of 3 cm or more. In patients with a visible vascular network on the chest, back, legs, skin regarded as "fine."

For verification dolihostenomelii (disproportionately long limbs) calculated the ratio of the length of the brush / height, foot length / height. Dolihosteiomeliyu accepted values for more than 10% and 15%, respectively.

To detect small abnormalities of the heart as a marker of visceral CTD 48 patients underwent echocardiography in the M-and B-modes, by conventional methods. In addition to the main indicators registered dysplasia of connective tissue of the heart: cleft oval window, primary mitral valve prolapse, abnormally located chord. Mitral valve prolapse was diagnosed according to the criteria of the American College of Cardiology, by two-dimensional echocardiography with a maximum systolic displacement of the mitral valve in the parasternal longitudinal position of 2 mm or more [84> 136 "143" 190]. Hemodynamically significant mitral valve prolapse was considered a combination of the latter with the expansion of the left atrium over 3.6 cm

Identifying ehopltnogo linear additional education in oral ventricular echocardiography in two mutually perpendicular planes in the sector scan mode with confirmation of results on the M-phase echocardiogram in systole and diastole regarded as abnormally located chord ventricle [127].

The severity of the syndrome CTD verified by criteria T. Milkovsky-Dimitrova and Karkasheva A. (1987), according to which the main features considered, flat feet, varicose veins, high sky, hypermobility of joints, blurred vision, distortion of the chest and spine, increased extensibility skin, arachnodactyly, secondary - abdominal wall hernia, abnormal ears, teeth, bite, transient joint pain, sprains and subluxations of the joints, etc. pterigodaktilyu

Light (1) the degree of CTD diagnosed in the presence of the two main characters; average (2) the degree - with three major and 2-3 minor or four major and one or two minor, severe (3) the degree - if there are five or more principal and three minor features.

2.3 The study of morphological changes in connective tissue structures of patients

To study the morphological and functional characteristics of the structure aponeuroses of external oblique and rectus abdominis muscle, and skin of patients with EAHs in 25 (25%) patients in the intervention group and 15 (50%) in the

control intraoperative biopsy material is extracted.

Portion of the aponeurosis of the rectus abdominis (hernia other sites) 1 cm² size and intact skin with abdominal wall measuring 1 * 0.5 cm within the surgical approach was dissected and fixed in 10% neutral formalin solution. After dehydration and embedding in paraffin were prepared histological sections of a thickness of 8-10 microns, stained with hematoxylin-eosin and resorcin-fuchsin with dokraskoy pikrofuksinom [97].

Histological sections were studied and described by light microscopy at different magnifications. In order to identify dysplastic changes in the structure of PT aponeurosis and dermis made histomorphometry sections stained with resorcin-fuchsin and pikrofuksinom [1, 2, 97]. With increasing immersion x1000 by using a point system test (25 points) were determined by the relative amount of elastic and collagen fibers (%) and volume relations in different parts of the aponeurosis and reticular dermis in 5 randomly selected fields of view in each study steklopreparate. The results are averaged.

Histological examination of the allocated four comparison groups:

- In the absence of indirect signs CTD material relates to the control group;
- There are 1-2-indirect signs of CTDCTD pointed out the possibility of 1 degree (I group).
- There are similar signs 3.4 - 2 degree (II group);
- If there is more than 5 characters and -3 degree (III group).

All morphometric study subjected 40 cases: 14 cases of the control group, 12 th indirect CTD grade 1, 11 - 2 degrees with CTD and 3 - from CTD 3 degrees.

CHAPTER 3.RESULTSAND DISCUSSION

3.1 Prevalenceof indirectconnective tissueofhernia carriersey

As statedin Chapter2, the study included 48 patientswith a varietyof abdominal wallhernias(study group) and 28patients withoutherniasat the timeof examination andhistory (control group). Durationherniahistoryrangedfrom 1 dayto 45 years.

Distribution of patientsdepending on the duration ofthe operationuntilhernia carriersstvashown in Fig.3 (in the analysis of the durationof herniahistorynot includedrecurrenthernia).

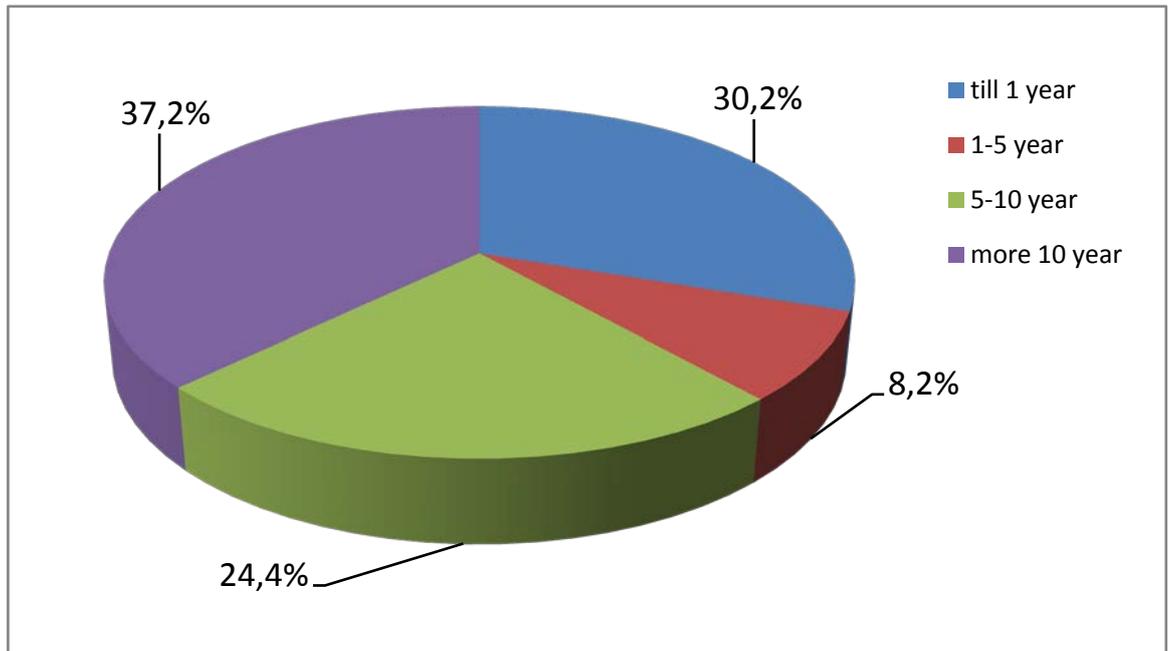


Fig.3. Distribution of patients depending on the duration of hernia carriage

As can be seen from the figure, timely surgical treatment turned 32 (37,2 ± 4,8%) patients from the onset of rupture. The bulk of hernia carriers is divided into approximately equal shares by maturity uptake from the moment of rupture.

In the first 3 years of treatment applied 67,4 ± 4,7% of patients.

Recurrent hernias (including inguinal) were 14 cases (14 ± 3,47%). Among the patients in this group a long history of hernia ranged from 3 months to 42 years (Me = 17.5 years). Terms of recurrence after hernia produced earlier than the last in a row as plastics ranged from 3 months to 42 years (Me = 4 years). In analyzing the uptake of this group medical care were found two categories of patients:

- a) Ask for help at 1 year after recurrence (6 patients), and
- b) Call for help from 1 year or more after a relapse (recurrence of the last, if there were a few) (8 patients) (Fig. 4).

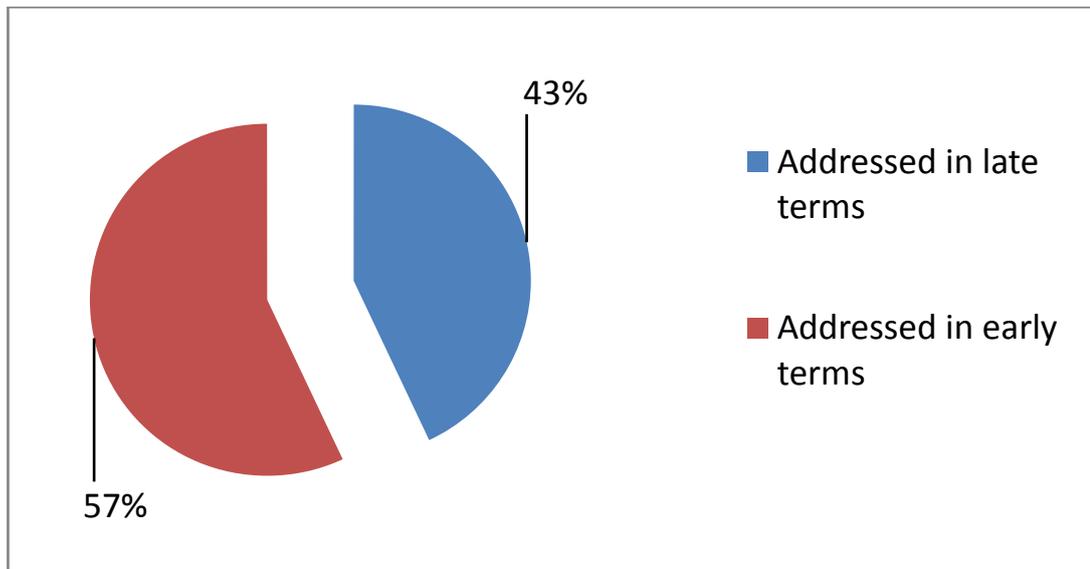


Fig.4. The distribution of patients with recurrent hernia on term to seek medical help.

In the group of recurrent hernia ($n = 14$) in 11 patients with hernia plastic composite plastic with local fabrics and mesh implant.

Postoperative hernia met in 15 patients. In 12 cases they were complications laparotomies, 3 - laparoscopic cholecystectomy. Term occurrence of hernia after surgery ranged from 2 months to 56 years ($Me = 1$ year);

In explaining the family history in 59 patients of the main group ($59 \pm 4,9\%$) revealed the presence of CTD (hernias, varicose veins, hemorrhoids, myopia, scoliosis) with relatives one degree, which is comparable to a control group - 18 cases ($60 \pm 8,9\%$) ($tc = 0,1; p > 0.05$). However, a family history abdominal hernias in the intervention group at 3-fold higher (36 patients, $36 \pm 4,8\%$), than in controls (3 cases, 10 ± 3) ($tc = 4,6; p < 0.01$) (Fig. 5). It speaks to the value of hereditary factors for herniation.

Face of heavy physical work, much of which seniority was associated with lifting and moving heavy objects weighing more than 10 kg, were in the study group, only $44 \pm 4,96\%$, in the control - $26.7 * 8.07\%$ ($1s = 1,83, 0.1 > p > 0.05$). These data support the idea that exercise-not the main factor of herniation.

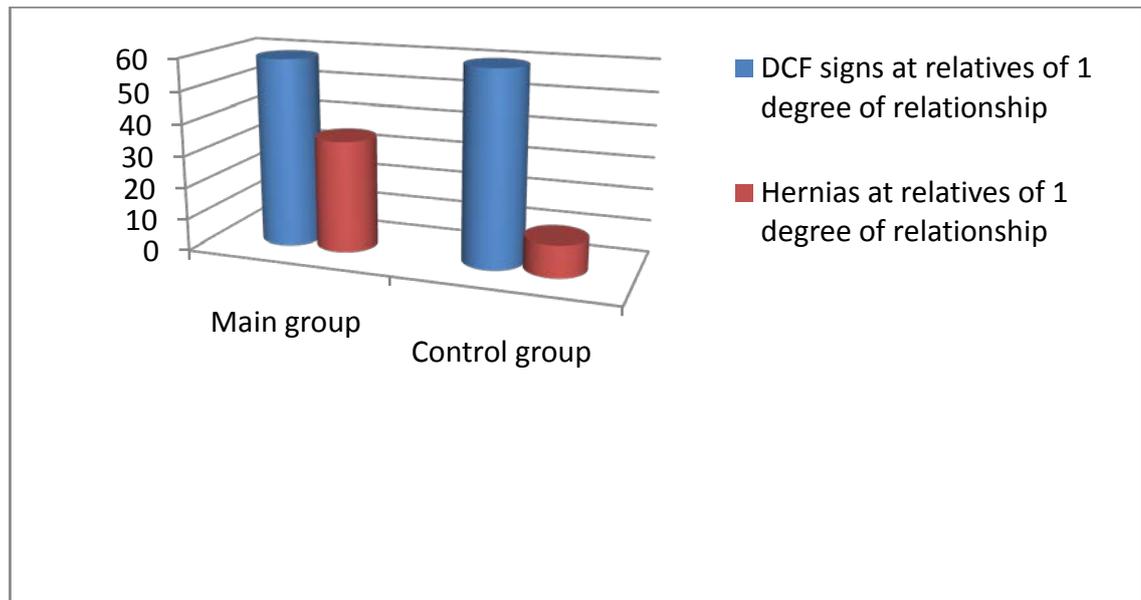


Fig.5. Signs of CTD, including abdominal wall hernias with relatives 1-degree relatives in the study and control groups, the study

In the study group almost all the major CTD occurred more frequently than the control group, but the differences were statistically significant only on the prevalence of disease and dolichoostenomelia (Table 6).

The main group of studies regarding the number of patients who have had a certain degree of severity of the CTD classification T.Mi, Dmitrov and Karkasheva A. (1987) was higher in all subgroups of patients with varying degrees of CTD, and both in the main and the control group tended to reduce the relative number of patients with an increase in the severity of the CTD.

In the study group of patients with 1 and 2 degree of severity was more than 2-fold greater, and patients with 3rd degree of CTD in the control group was not quite. In the main study group total number of patients with verified degree of CTD was higher than in controls (Table 7).

Table 6

The prevalence of the main features of CTD in the study and

controlgroups (M ± m)

EvidenceCTD	Main group, n=48		Control group, n=42		P
	abs.	%	abs.	%	
Flatfoot	35	35±4,8	7	23,3±7,7	p>0,05
Varicoseexpansion veins	41	41±4,9	11	36,7±18,8	p>0,05
Joint hypermobility	21	21±4,3	4	13,3±6,2	p>0,05
Blurred vision	19	19±3,9	2	6,7±4,6	p<0,05
Dolihostenomeliya	33	33±4,7	5	16,7±6,8	p<0,05
Pathology spine	9	9±2,9	3	10±5,5	p>0,05
X- shapeddeformitylimbs	34	34±4,7	6	20±7,3	p>0,05
Arachnodactyly	16	6±3,7	3	10±5,5	p>0,05
The deformation ofthe chest	1	1±0,99	0	0	-
Increasedextensib ilityof the skin	0	0	0	0	-
High sky	0	0	0	0	-

Table 7

The distribution of patientsin groups according
the severity of theCTD(M± m%)

Severity of DCF (according to T.Milkovska- Dmitrova, And.	Main group, n=48		Control group, n=42		P
	abs.	%	abs.	%	
1	38	38±4,8	5	16,7±6,8	p<0,01
2	19	19±3,9	2	6,7±4,5	p<0,05
3	3	3±1,7	0	0	-
Total	60	60±4,9	7	23,3±7,7	p<0,001

In the analysis of the prevalence of indirect signs of CTD in the main group of hernia carriersey with various abdominal wall hernias makes comparison with the same parameters as the control group and the comparison group in the main, with

the other patients. To do this within the main groups were identified 4 subgroups. Patients with inguinal and femoral hernias (I) were considered within one subgroup (n = 58) because of the small number of femoral hernias and anatomical integrity of inguinal-femoral region [21, 59].

Two subgroups of patients were identified for reasons of common pathogenesis hernias in these patients. This hernia carriersi POVG with EGR and (II), as well as umbilical hernia and abdominal hernias white line (III) (n = 18 and n = 17, respectively).

Patients with co-localization of hernias were the smallest subgroup (IV) (n-7).

In the subgroup of I total number of patients with 1 "2 and 3 degree CTD classification T. Milkovsky-Dmitrov Karkasheva A. (1987) amounted to $56,9 \pm 6,5\%$, which is much higher compared to the control group $-23.3 \pm 7,7\%$ ($p < 0.01$). Patients with 1 degree of CTD was greater than in the control group $- 37,9 \pm 6,4\%$ ($p < 0.05$), with the 2 nd degree of CTD $- 13,8 \pm 4,5\%$ ($tc = 1.1 p > 0.05$), with the third- $5D \pm 2,9$ ($tc = 1.8, p > 0.05$).

In subgroup II 10 hernia carriersey ($55,6 = UI, 7\%$) had 1 or 2 degree CTD, which is higher than the control group ($p < 0.05$), and 8 patients ($44,4 \pm 11,7\%$) did not CTD had; $38,8 \pm 11,5\%$ had 1 degree of CTD, and $16,7 \pm 8,8\%$ had grade 2 CTD.

In subgroup III number hernia carriersey with CTD was 11 ($64,7 \pm 11,6\%$),-they have found one or two degree of CTD, which is higher than the control group ($p < 0.01$). In 6 patients ($35,3 \pm 11,6\%$) identified one degree of CTD, and 5 ($29,4 \pm 11\%$) - 2 degree of CTD.

Attention is drawn to the lack of patients with grade 3 CTD asin the control group, in subgroups II and III. This suggests a lower value for the CTD POVG, EGR and hernias white line of the abdomen, but do not forget about reliable frequency exceeded CTD (1, 2, 3 degrees) hernia carriersey among these subgroups in general compared to the control group.

In the subgroup of patients with IVodin-umbilical hernia and periomphalic had CTD, 3 patients with umbilical hernias in conjunction with POVG, EGR and bilateral inguinal hernia respectively identified Grade 1 CTD. Even at three hernia

carriersey who had in one case the combination of EGR and diastasis recti, and two others - POVH and inguinal hernia - revealed 2stepen CTD.

The average number of major indirect CTD sostavilo1 in subgroup 1, $8 \pm 0,2$; in group II - $1,7 \pm 0,3$; in class III - $1,8 \pm 0,24$; in group IV - $2,4 \pm 0,4$. The average number of major indirect signs of CTD in the control group was $1,4 \pm 0,6$, which is less compared to all subgroups of the main group, but these differences were not statistically significant.

The problem of the choice of treatment of hernias of the main group was solved including in the condition and extent of ST CTD patient.

In this example, the presence of family history, 1tyazheloy degree CTD patient, a young able-bodied vozrastprodiktovali preperitonealnogo protezirovaniyaperedney need to choose the abdominal wall as the most pathogenetically sound and reliable method of surgical treatment in the condition in the patient CT.

The analysis showed the high importance of the CTD in the genesis of external abdominal hernias. This is confirmed by a higher prevalence of hernia in relatives of patients one-degree relatives in the study group, no statistically significant differences in the test and control groups according to severity of physical labor. Higher was the spread of indirect signs of CTD in the main study group, and as a result, the total number of people with some degree of CTD compared to the control.

These data indicate the high significance of CTD vgeneze external abdominal hernias.

3.2 The incidence of dysplasia of the connective tissue of the heart hernia carriers

Among the study group patients (n = 100) 48 hernia carriersyam ($48,0 \pm 5,0\%$) performed echocardiography. Of these, there were 32 males ($67,0 \pm 6,8\%$), women

- 16 ($33 \pm 6,8\%$) patients.

As shown in Table. 8 of hernia carriersey frequent echocardiography signs, hypertension and coronary heart disease in the form of hypertrophy of the left ventricle and interventricular septum, dilatation of the left ventricle and left atrium. Among hernia carriersey who underwent echocardiography ($n = 48$) of patients with inguinal hernias were 30 ($62,5 \pm 7\%$), with the umbilical - 8 ($16,7 \pm 5,4\%$), POVG - 3 ($6,2 \pm 3,5\%$), EGR - 5 ($10,4 \pm 4,4\%$), the white line of the abdomen and hip - 1 ($2,1 \pm 2\%$). In general, showed a high incidence of CTD patients with heart-hernia carriersey, identified by echocardiography (Fig. 5).

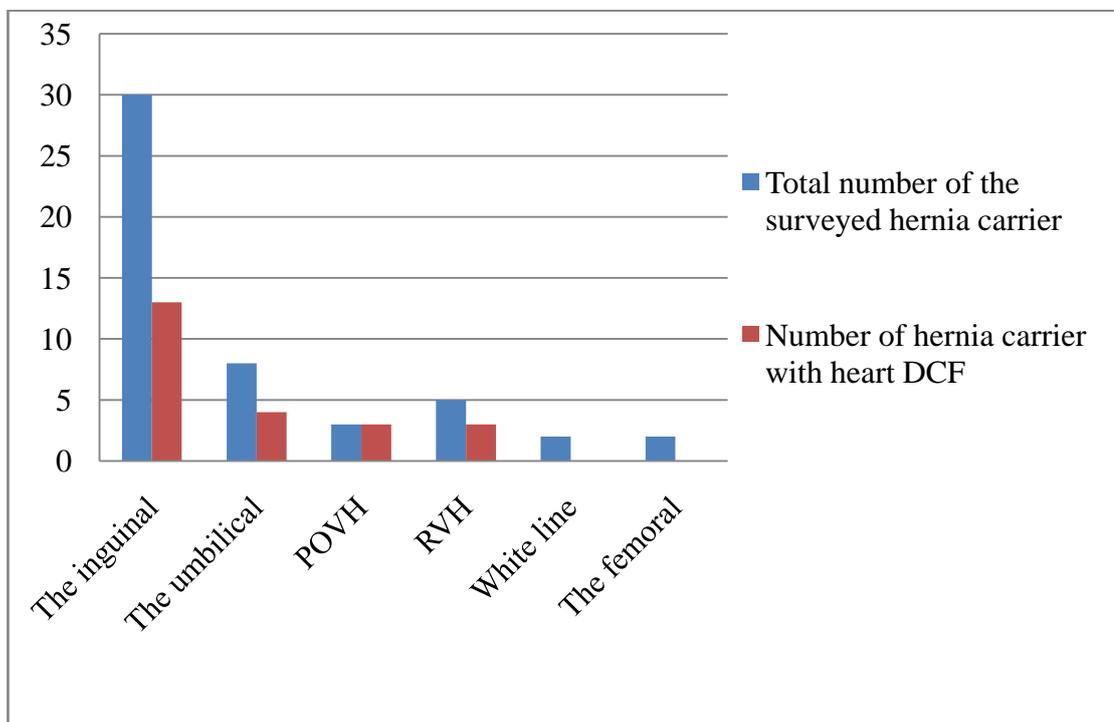


Fig. 5. The incidence of heart disease in CTD patients with various types of abdominal wall hernias according to echocardiography

When echocardiography in 22 ($45,8 \pm 7,2\%$) hernia carriersey identified CTD heart. In 12 hernia carriersey ($25 \pm 6,3\%$) identified a primary mitral valve prolapse, including in 5 ($10 (4 \pm 4,4\%)$) – hemodynamically significant, with the expansion the left atrium.

In 12 patients ($25 \pm 6,3\%$) had abnormally located chord left ventricle, and 3 ($6,3 \pm 3,5$) - Extended front doors mitralnogoklapana.

Table 8

Echocardiographic signs of heart disease among the treatment group ($M \pm m\%$)

Echocardiographic signs of heart disease		Frequency occurrence	
		abs.	%
Seal aortic		22	$87,5 \pm 4,8$
Myocardial hypertrophy of the left ventricle and ventricular septum between		13	$68,8 \pm 6,7$
Dilatation of the left ventricle		19	$39,6 \pm 7$
Dilatation of the left atrium		21	$67 \pm 6,8$
Regurgitation	On the tricuspid and mitral valves of 1 degree	9	$81,3 \pm 5,6$
	On the tricuspid and mitral valves of 2 degrees	7	$14,6 \pm 5,1$
Calcification of the aorta, the aortic and mitral valves		7	$35,4 \pm 6,9$
Primary mitral valve prolapse	Hemodynamically significant	5	$10,4 \pm 4,4$
	Hemodynamically insignificant	7	$14,6 \pm 5,1$
Abnormally located chord of the left ventricle		2	$25 \pm 6,3$
Lengthening of the anterior leaflet of the mitral valve		3	$6,3 \pm 3,5$

When echocardiography in 22 ($45,8 \pm 7,2\%$) hernia carriersey identified CTD heart. In 12 hernia carriersey ($25 \pm 6,3\%$) identified a primary mitral valve prolapse, including in 5 ($10,4 \pm 4,4\%$) - hemodynamically significant, with the expansion the left atrium.

In 12 patients ($25 \pm 6,3\%$) had abnormally located chord left ventricle, and 3 ($6,3 \pm 3,5$) - Extended front doors mitralnogoklapana.

3,5) -Extended frontdoorsmitralnogoklapana.

One of the signs of heart DSG met in 18 patients ($81,8 \pm 8,2\%$), and in 7 of them a degree of CTD on the criteria set by us can not be set because of an insufficient number of manifestations of CTD. Two criteria met in 3 patients ($13,6 \pm 7,3\%$), three - 1 patient ($4,5 \pm 4,4$). Distribution of patients with echocardiographic signs of heart CTD depending on the severity of the CTD on circumstantial evidence presented in Table 9.

Table 9

Hernia carrier distribution depending on the severity of symptoms and the number of CTD

Severity of DCF (according to T. Milkovska)	Number of CTD in hernia carriers		
	1	2	3
1	10	1	0
2	1	1	0
3	0	1	1
Total	18	3	1

There was a strong positive correlation between the number of symptoms and the degree of heart CTD among hernia carriers (Pearson $r=0,72$, $p < 0,001$).

Thus, "research has found a direct relationship between the number of indirect signs of CTD and CTD heart. Consequently, as the number of external signs of CTD increases the probability of detection of the heart, which may be another criterion, confirming the presence of CTD in the patient.

This indicates the importance of a comprehensive evaluation of patients with additional methods, such as an ultrasound of the heart, which is available in daily practice.

3.3 Results of histological examination of the connective tissue structures of patients

When stained with hematoxylin-eosin structure central part of the aponeurosis in the

control group was represented in layers spaced, undulating curves and parallel arranged bundles of collagen fibers. In neighboring layers, they meet at an angle to each other (Fig. 6).

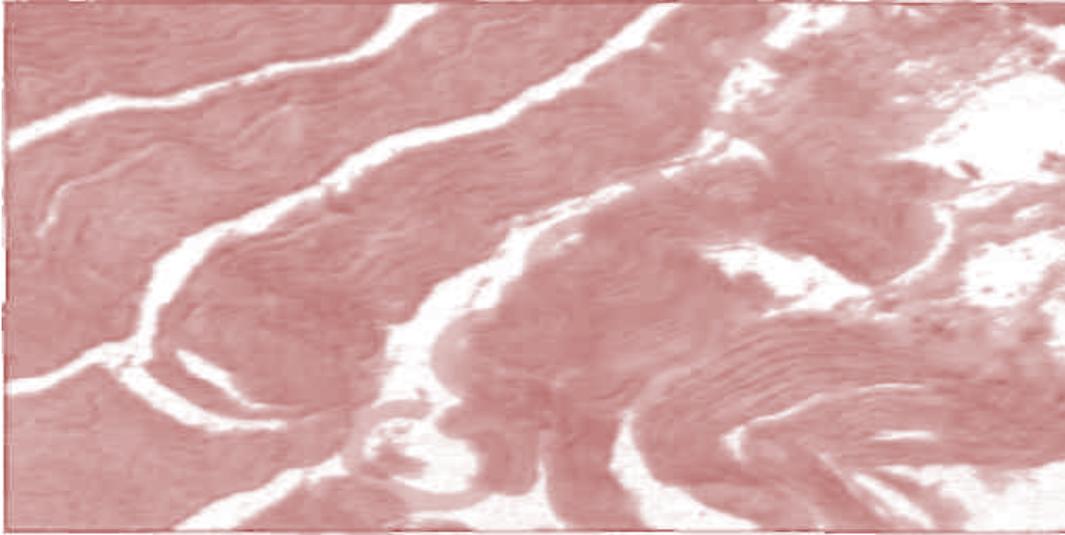


Fig. 6. The typical structure of human aponeurosis. J., 40 liters. Heme-EPZs. SW. x100. Beams between the described arrangement parallel to them, a few thin elastic fibers, fibroblasts and fibrocytes.

It is noteworthy that the aponeurosis on both surfaces is surrounded by a fibro-elastic layer with increased EV, which gives the spurs deep into the way that the central parts of the aponeurosis are divided into separate structural fiber units (segments) (Fig. 7).

EV is found in much greater numbers than in the central part of the aponeurosis and extends in all directions, up to perpendicular.

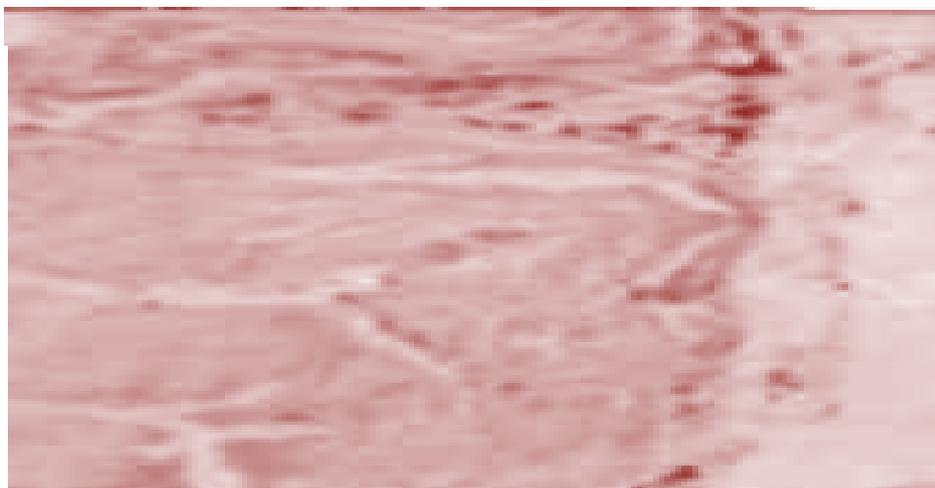


Fig.7.Elastinandcollagen fibersin thehumanaponeurosis.M.,39 l. Resorcin-fuchsin +pikrofuksin.SW.x100

Apparently, the degree of elongationof the aponeurosisshould beproportional to the degreeoffibro-elastic outerlayers and theirspurs, as well as the degree ofwaviness ofthe collagen fibersof a centraldepartment.In the presenceof indirect signsCTDrelevantGrade 3ripplestrokecollagen fibersin the central partof the aponeurosisat signifcantsitesmarkedlyflattened(Fig.8).Surfacefibro-elastic layers and theirdeepspursmarkedlythickened andenrichedEV, mostly irregularlythickened andfragmented(Fig.9).

Papillary dermisin the control grouppresenteda looseoknistoyunformedSTrepresentedby thincollagen, elasticfibersandretikulinovymi, which were locatedin the loops offibroblasts, macrophages, basophilsand tissue. Thislayeris also rich insmallovenosnymivessels (Fig. 10, 11).

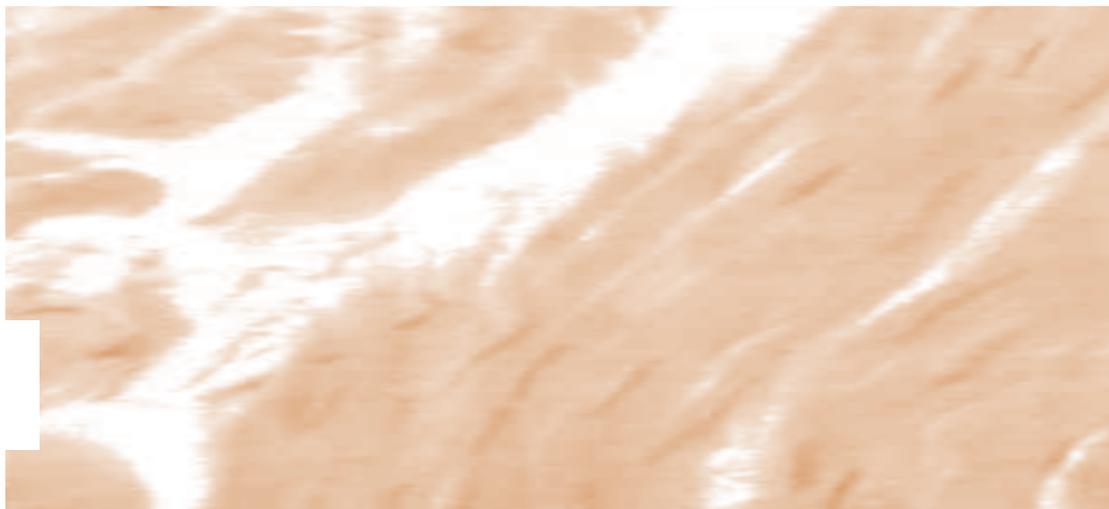


Fig.8.StructureaponeurosisifCTD3 degrees.M.,45 liters.Heme-eoz.Uv.x400

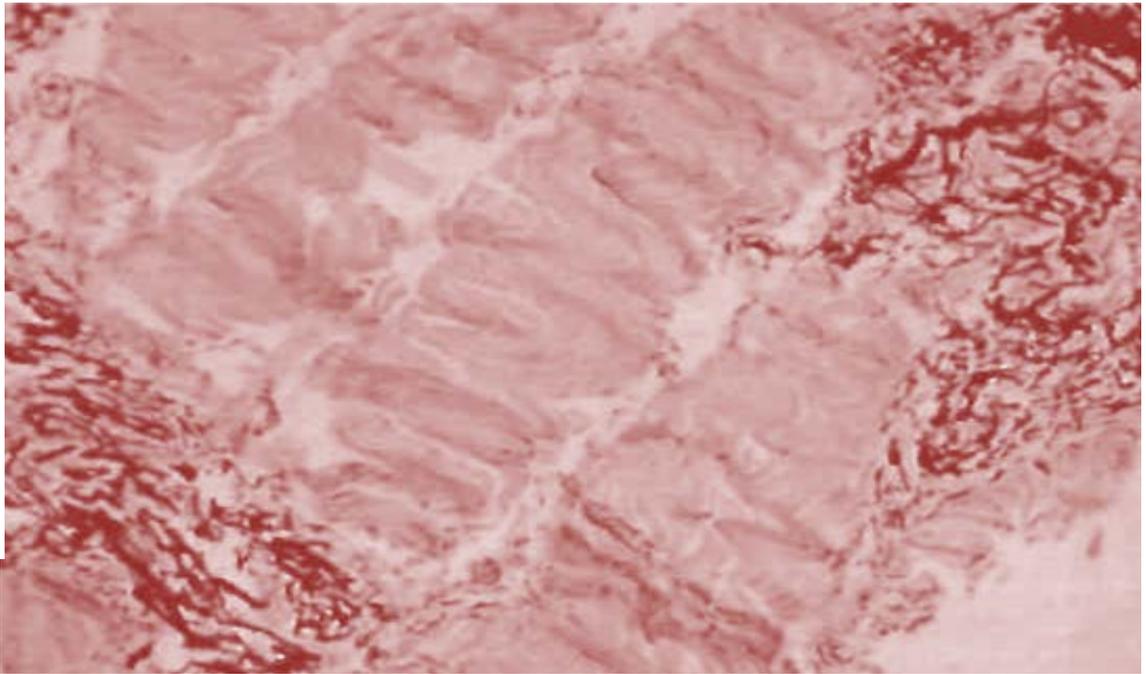


Fig.9.Elastin and collagen fibers in the human aponeurosis in CTD grade 3. J.,58 1.
Resorcin-fuchsin + picrofuchsin. SW. X400

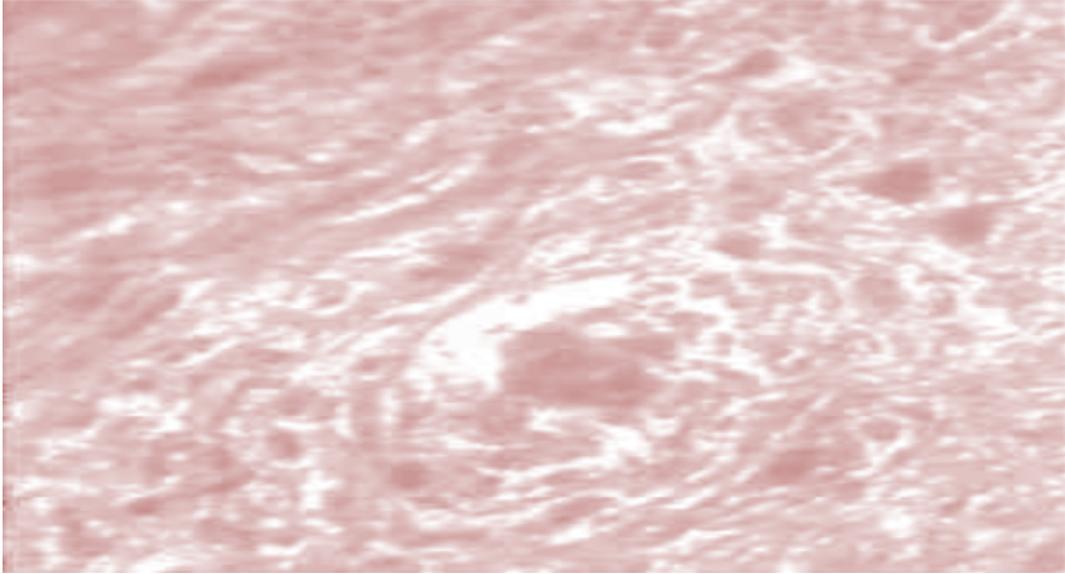


Figure 10 histology papillary dermis pickling in the control group M, 50 years old. Heme-EPZs SWX400

Elastic fibers were few papillary layer with thin, preferred direction perpendicular to the surface of the skin. At the border with the network of elastin fibers which was predominantly parallel to the skin surface Figure 11.

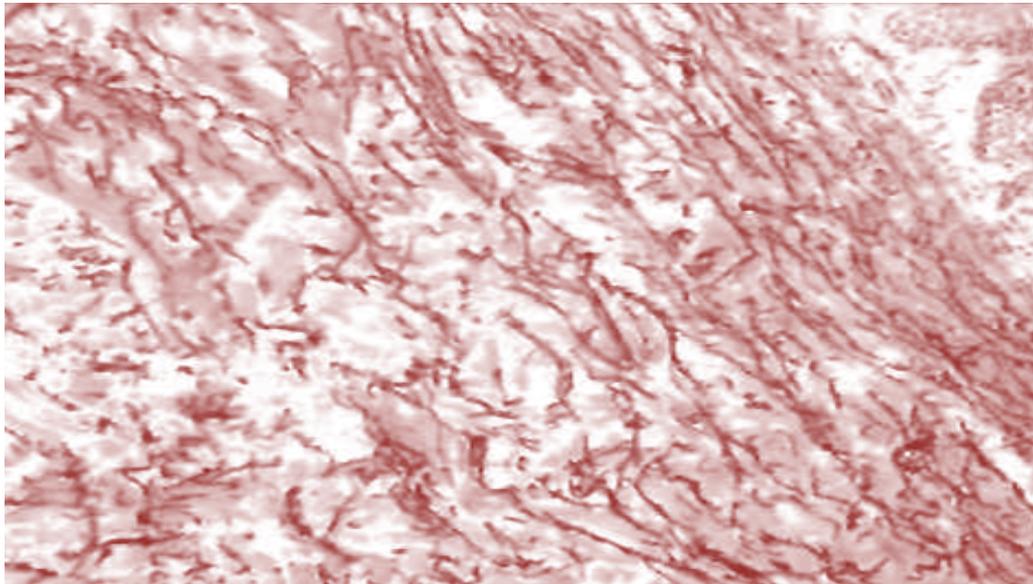


Fig. 11. Elastin and collagen fibers in the dermis. J., 44, a control group. Resorcin-fuchsin-I-pikrofuksin. SW. X100

However, there were significant for all degrees of severity of CTD increase the

ratioEV/ HFinaponeurosisandin netsloedermis.

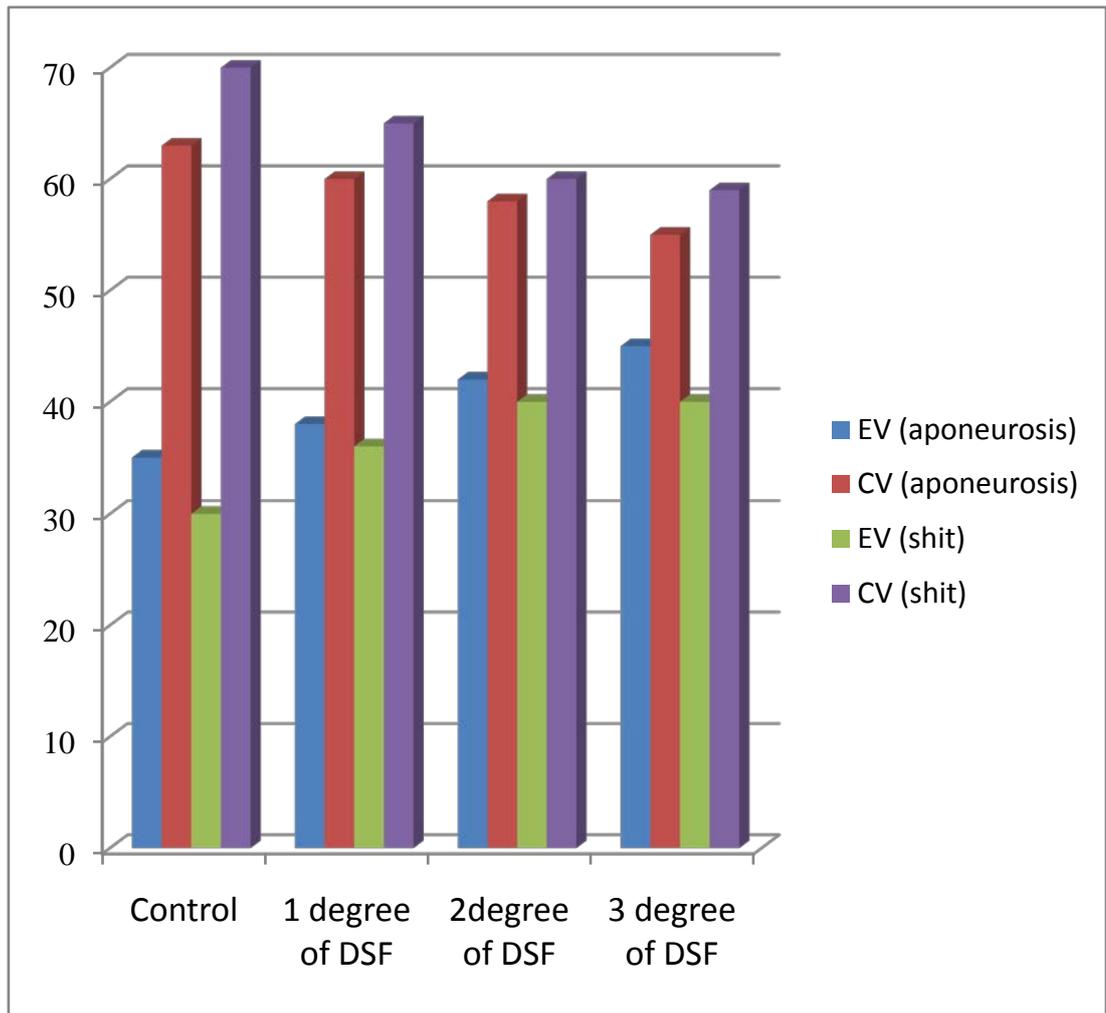


Fig.12. The relative amounts of elastic and collagen fibers (%) in the aponeurosis and reticular dermis, depending on the presence of indirect signs of CTD

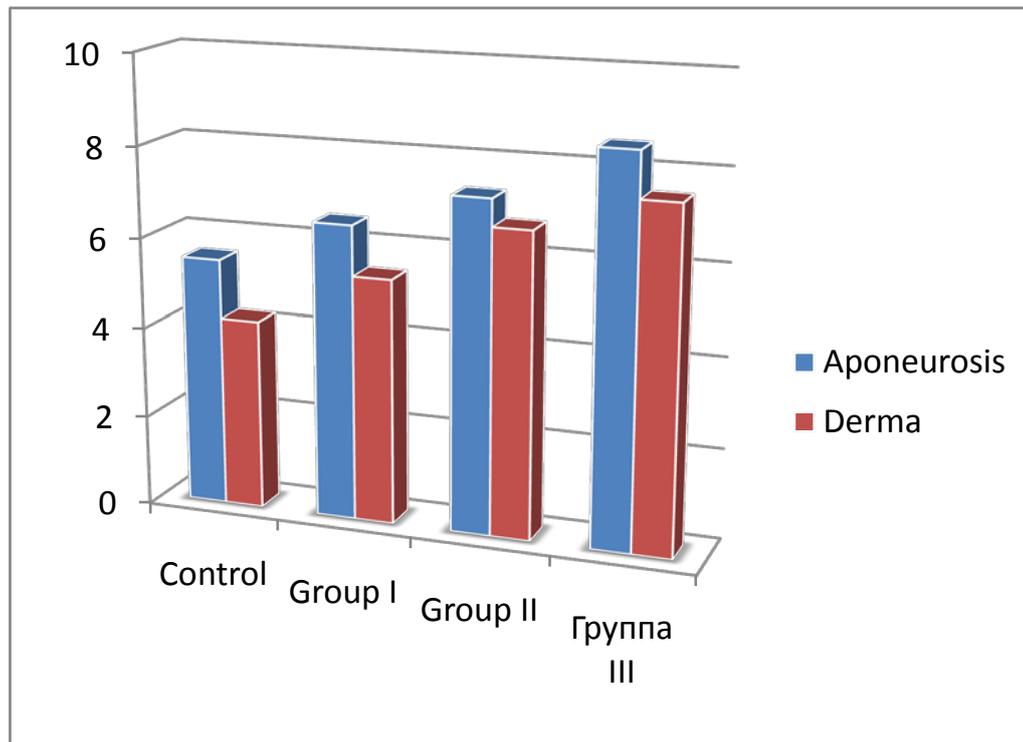


Fig. 13. Relations EV / HF in aponeurosis and reticular dermis, depending on the presence of indirect signs of CTD

There was a strong positive correlation between the number of major indirect CTD volume ratio and EV / HF in the aponeurosis (r Pearson = 0.92, $P < 0.001$), and between these parameters in the aponeurosis and the dermis (Pearson $r = 0.89$, $p < 0.001$).

Aponeurosis in histology refers to a group of fibrous membranes, which are characterized by a bad stretch because the bundles of collagen fibers and lying between fibroblasts and fibrocytes in a specific order in several layers on top of each other. Several best stretch has a mesh layer of the dermis. Thus, the marked increase in the relative content of EV in the aponeurosis and reticular dermis and a decrease of the relative volume KB connected with the increase of indirect signs of CTD. This may result in the first place to increase elasticity parallel decrease in the strength of the corresponding tissues. Described the histological changes are immediate signs of connective tissue dysplasia, which can be used in the practical diagnosis of the latter.

Thus, there is a close link between the macro-and microscopic signs of CTD: with

increasing severity of the CTD change is increasing the direct and aponeurosis of external oblique abdominal muscles (depending on the location of the hernia and therefore place the biopsy). These changes include the violation of the architectonics of EV and KB in aponeurosis, and increased the ratio of EV / HF.

Also found a direct correlation between the microscopic changes in the aponeurosis and dermis, depending on the severity of the CTD: an increase in the ratio EV / HF in these structures was proportional.

Thus, we can talk about the rise of pathological changes in the aponeurosis and dermis with increasing severity of CTD and reliable direct correlation between the degree of CTD and pathological changes of the aponeurosis. At the same time there is a direct correlation between changes in the aponeurosis and the dermis.

Perifocal inflammatory fibrosis, as well as organizing and fibrosing inflammation of the implant material and fixing seams imeetrubtsovy character, which explains the absence of EV and the preferred orientation relative to the surface of newly formed KB implant fixation sutures and their components. Obviously, here, it is not a dysplastic changes. PT, but its post-traumatic (operation), and post-inflammatory remodeling (restructuring).

The resulting final fibrotic scars, based on their structure, should have a relatively high strength and low elongation. Given that the implant looks like a fine-mesh nets, beams CV, formed in its place should be multidirectional speed, potentially reducing the strength of the resulting scar compared sestestvennym aponeurosis. The proximity of fixation sutures to the implant, to our knowledge, has the consequence of the spread of post-inflammatory scarring bystroeimassivnoe fibrosis last.

Morphometric study sites with the anterior abdominal wall and aponevrotic preperitoneal polypropylene mesh arrangement fragments revealed no significant differences in the degree of inflammatory response to the introduction of a foreign body ($p > 0.05$). This indirectly suggests that the technique sublay no more traumatic than onlay, so the use of techniques sublay justified from the point of trauma. The degree of inflammation in the mesh fixation suture was proportionate

to both methods.

Thus, the presence of foci of fibrosis, productive inflammation and immature CT in mesh implantation after 10 months or more after the first operation point to long-term (chronic) inflammation, which is more pronounced in implant fixation sutures.

Despite some strength reserve formed peri-prosthetic scar, it should be noted that most of the load in the first weeks after surgery are just fixing the mesh seams. When viewed as a sign of a hernia congenital or acquired weakness of CT it is evident that the possibility of fixing the grid as possible from abnormal tissues from the exit site of hernia, so as not to exacerbate existing local degenerative processes in the NT by surgical trauma, compression, ischemia in tissue fixation net.

On the contrary, fixing the net within affected tissues can lead to the insolvency of the mesh fixation sutures because aggravation of degenerative processes in PT.

Resolve these problems by location preperitoneal mesh implant, which has a number of advantages over other methods of fixation

- abdominal pressure pushes the mesh to the anterior abdominal wall, which contributes to its more rapid engraftment;

- there is a rare opportunity to fix the grid due to the pressing

actions within the abdominal pressure, thus reducing the number of points of fixation, which is subject to rapid degenerative CT and is functionally deficient.

In the degenerative changes of the fabric made hernioplasty local tissue should be avoided in most cases, except those in which there is a high risk of infection (eg, strangulated hernia with necrosis of the intestine).

3.5 Selecting a method of surgical treatment of abdominal wall hernias

All patients were operated on the basic group. As shown in Table. 10, priority is given to the treatment of ventral hernias not pull technique using a polypropylene mesh implant.

Among the methods used autoplasty way Postempski and Bassini inguinal hernia in two

cases, the method of Mauowithumbilical hernias in three cases, misrepresented the number of two-for strangulated hernia, the method of Bassini and Rudzhi-Parlavechcho with femoral hernia in two cases. Thus, the plastic local fabrics used only in 7 patients (7%), and at 2-understrangulated hernia at high risk of infection with the implant.

Table 10

The distribution of patients hernia carriersey depending on the type hernioplasty

Types of hernia	The number of cases	Use PP mesh implants	Autoplastic
Inguinal	56	54	2
Umbilical	14	11	3
Postoperative ventral hernia	12	12	-
Recurrent ventral hernia	6	6	-
Whiteline of the abdomen	3	3	-
Femoral	2	-	2
Hernia associated localizations in the muscles of the diaphragm	7	7	—
Total	100	93	7

In 9 cases out of 93 ($9,7 \pm 1,9\%$) by using a polypropylene mesh implant latter was fixed by the method different from preperitoneal prosthetic inguinal hernias and sublay methods for other types of hernias.

In patients with L POVG applied aponevrotic location grid, even at 1 - Combined plastic onlay (combination duplikatur anaponevrotic method and location of the grid).

In 7 patients with inguinal hernias underwent surgery Lichtnstein, and in one of them - in conjunction with the operation of Winckelmann-Bergman for congenital

oblique inguinal hernia. In other cases (84 patients, 90.3%) used a procedure sublay. Pri treatment of strangulated hernia in one case required resection of the small intestine, and in another - resection of the area of the greater omentum.

In 23 cases (23%) was used for active Redon drainage to drain surgical wounds. Often drained wounds at POVG and EGR - in 12 cases out of 18 ($66,6 \pm 4,7\%$), at least - in the inguinal (6 of 56 patients; $10,7 \pm 3,1\%$), umbilical (4 patients out of 14 ; $28,6 \pm 12\%$), the white line of the abdomen (1 patient of 3; $33,3 \pm 27\%$).

Terms of postoperative wound drainage ranged from 3 to 10 days (Me = 4), an average of $4,7 \pm 0,4$ days.

Timing the removal of sutures after surgery ranged from 5 to 15 days (Me = 8), the average $8,4 \pm 0,18$ days. When POVG and EGR seams kept to an average of $10 \pm 0,5$ days, which is slightly longer than the umbilical - an average of $8 \pm 0,5$ days, and inguinal hernias - an average of $7,4 \pm 0,2$ days ($t = 5, p < 0.01$). This may be due to several large cases POVG BMI and EGR, and the consequent need for longer mechanically hold the edge wound sutures.

It should be noted that the common selection criteria and techniques for operations in outer abdominal hernia does not exist, they are in the making. When choosing a method for the operation of external abdominal hernias should consider some of the circumstances.

1) As mentioned above, a feature of the external abdominal hernias is their high association with other clinical signs of the CTD, the prevalence of these symptoms was significantly higher in the study group. The number of people with established degree of CTD was not less than 50% in all subgroups of the main group, which is more a factor of 2 compared to the control.

This fact makes an individual approach when choosing surgery for ventral hernia in the condition PT. In the case of the patient's any major CTD is required in terms of the radical, the most reliable operation. This operation on nashvzglyad is technique preperitoneal peredneybryushnoy prosthesis wall.

2) The operations for POVG and EGR immersion hernial contents into the abdominal cavity is at risk of intra-abdominal hypertension.

3) In a connective disease has local conditions for this technique. If not pull the use of traditional methods to close at least the exit site of hernia, the tension also increases the risk of hernia inguinal-femoral region by moving the fabric.

4) Equally important is the location and method of fixation of the mesh implant during surgery. Proved change connective tissue structures in the gate area hernia necessitate fixing the grid at a distance from the area.

In the pilot study found that in the area of grid lock seams are more pronounced inflammatory reaction of the surrounding tissues and the violation of the architectonics of connective tissue fibers.

Fibrosis around the suture zone reached 3 mm in diameter. This implies the following. First, fix the grid in the exit area can cause (or strengthen existing) degenerative processes in the PT.

Secondly, fixing the grid should be rare, at least 2 cm, the seams do their locking function, but did not serve the cause of the ill, functionally defective scar in this area. Preperitoneal prosthetic mesh implant can fix quite rare seams due to the fact that intra-abdominal pressure pushes the mesh to the anterior abdominal wall and prevents migration of the grid. In turn, this should reduce the load on the joints after surgery. Become especially important this when the surgeon operates a patient with clinical signs of CTD.

So preperitoneal prosthesis as a modern method of surgical treatment of abdominal hernias various locations include the following:

1. fixation of tissues without tension - the basic principle of modern herniology;
2. double lock seams (in two rows) is reliable, rare joints (at least 2 cm) can reduce the inflammatory response in mestefiksatsii;
3. abdominal pressure pushes the mesh to the anterior abdominal wall, preventing displacement of the implant and reducing the load on the locking joints.

Given the significant differences of prevalence of indirect signs of CTD in the study and control groups, a high incidence of heart CTD hernia carriersey, histological data, it is safe to say that the preperitoneal mesh implant location for any type of hernia is pathogenetically substantiated, and also one of the most

reliable surgical treatment.

CONCLUSION

Treatment of external abdominal hernias includes hundreds of techniques, from which it can be concluded dissatisfaction surgeons results of operations. Theoretically, the ideal outcome of surgical treatment of ventral hernia should be considered arbitrarily long disease-free postoperative period. However, we know that no one method of treatment can not be considered absolutely effective. This view is supported by long-term follow up of patients who have a growing number of hernia recurrence over time.

One of the reasons of unsuccessful operations in terms of recurrence is inadequate, pathogenetically unjustified surgery. Currently, there are two fundamentally different approaches to the treatment of ventral hernias.

The first is based on the close of hernial ring local tissues and is referred to as the tension method, since the actions of the surgeon closer, pulling, tissues in the exit area of hernia.

The second is based on the use of plastic mesh stents, which are located in different layers of the abdominal wall, and serve at least two purposes: to replace the support function of the connective tissue structures (fascia, muscles) and avoid tension tissues in the hernia. It is known that the tension of tissues - the "enemy" surgery, which involves degeneration of the connective tissue formations mentioned.

Speaking of pathogenetic validity of a transaction with abdominal hernias, one can not say about the etiopathogenesis of hernias. Demonstrated that increased intra-abdominal pressure can not be considered a highlight in the occurrence of hernias. Important role played by hereditary, constitutional, biochemical factors, and smoking. Hernia associated with other diseases, which are based, as well - a congenital or acquired weakness PT. The weakness of the CT has long been known, but only the appearance of fine biochemical and morphological studies allowed to decipher the underlying processes and pathophysiology Pathomorphology PT.

Gather together often disparate information about the weakness of the connective

tissue structures of the body and to determine the value of this state for herniation can be in one of the most current theories to date - the concept of connective tissue dysplasia. CTD - by definition a multi-faceted, a clinically and genetically heterogeneous process that captures, in one way or another, many organ systems and can not be reduced to a "mere" weakness PT. This is a systemic body pain, so CTD-theory is a new approach to the diagnosis nozological diseases can reveal new aspects of the seemingly long studied processes.

Interest in CTD practical surgeons herniology due primarily to the fact that in herniology question remains about the mechanism of herniation, as evidenced through the many articles by contemporary authors on the subject. If you open the question of the pathogenesis, the pathogenetic and adequate treatment is not possible. This makes the theory CTD even more urgent.

In addition to systemic changes CT proved and local degenerative processes in tissues.

With this in mind, it becomes especially clear that it is the use of mesh implants pathogenetically justified, as it allows to fix the grid outside the exit hernia, preventing thus strengthening existing local degenerative processes in the background of the general weakness of the PT.

The study was conducted in two aspects - Clinical and Experimental. The clinic studied patients operated for external ventral hernias of various locations. Bazirovalsya to study the quality of repair processes prim plantation polypropylene mesh prosthesis in the abdominal wall rabbit.

The clinical part of the work is based on the clinical practice of the Department of Surgery II clinical TMA from September 2009po May 2012. A total of 130 patients, of which 100 hernia carriersey the main group studies, the 30th different abdominal diseases and injuries - control.

All patients were examined by the standard procedure for the detection of phenotypic features of CTD, 48 patients of the group echocardiography for evidence of dysplasia of the connective tissue of the heart. To detect the occurrence of CTD in different types of hernia within the main groups were

identified 4 groups, depending on their anatomical and pathogenetic commonality: a subgroup of inguinal and femoral hernias (I), and EGR POVG (II), umbilical, and a white line of the abdomen (III) and co-localization of hernias (IV).

On examination of the main group is 2.5 times more often met people with some degree of CTD compared to controls ($p < 0.01$) were found patients with severe CTD (3%), which were not in the control group. Specified subgroup I, II, III total number of patients with established degree of CTD was significantly higher than the control.

Family connective disease symptoms were equally inherent in the basic patients and the control group, but the hereditary hernias in the study group was significantly higher ($p < 0.05$).

Heavy physical work, met in $44 \pm 5\%$ of the patients in the study group and $26,7 \pm 8 > 1\%$ in the control group, but the differences are not statistically significant ($p > 0.05$), which also favors the big role and CTD casts question the prerogative of high WBD to form abdominal hernias.

These data suggest a strong association with the CTD of abdominal wall hernias, and the value was higher than the CTD for hernia inguinal-femoral region.

Thus, the surgeon-herniology and general surgeon should know changes and status in the patient, to own a schematic diagram of the CTD diagnostics, which allows for fast, non-invasively assess the connective tissue status of the patient.

Should not only take into account the existing indirect CTD at the time of inspection, but manifestations of hereditary mesenchymal failure (including abdominal hernia) among relatives I stepeniroCTDva, since hernia carriers these changes may not yet be in the absence of risk factors for the various states.

No statistically significant relationship between age and the number of indirect hernia carriersey CTD indicates the need for examination of patients, regardless of age.

For quality of care for patients with modern manifestations of CTD is necessary to attract specialists in related disciplines practitioners, vascular surgeons, orthopedists, ophthalmologists, gastroenterologists and others - depending on the

severity of the processes in the body hernia carriersya that may be manifestations of the CTD. In this case, the patient requires an understanding of the realization that some of the diseases and conditions related to each other and require a significant effort in terms of prevention and timely and comprehensive treatment.

External indirect CTD - are not the only markers, there are inherent phenotypic CTD, which can be identified by additional research methods, as shown in the survey hernia carriersey by echocardiography.

In the main study group at EhoTSG in 22 ($45,8 \pm 7,2\%$) hernia carriersey identified CTD heart - the primary mitral valve prolapse, abnormally located chord left ventricle.

There was a strong positive correlation between the number of symptoms and the degree of heart CTDCTD among hernia carriersey (Pearson $r = 0,72$; $m = \pm 0,1$; $t = 7$).

Thus, echocardiography can be recommended as additional studies to confirm hernia carriersey CTD. No differences in subgroups I, II, III on the prevalence of CTD heart says that the localization of a hernia during echocardiography should not be ignored. The fundamental point in echocardiography is the very presence of herniation as one of the indirect signs of CTD.

In the study of morphological and functional features of the structure aponeuroses of external oblique and rectus abdominis muscle, skin, abdominal wall with the EAHs in patients and control group intraoperative biopsy material is extracted with a further histological (morphological and morphometric) studies.

With increasing severity of the CTD revealed smoothing collagen fibers, thickening of the surface layers of fibro-elastic aponeurosis by increases irregularly thickened and fragmented elastic fibers. The skin changes are detected in the form of fibrosis, vasculitis, nonspecific papillary layer, thinning of the collagen fibers, uneven thickening and reducing the number of elastic fibers of the mesh layer. In general, the observed imbalance of elastic and collagen fibers, with an increase in the ratio between them in favor of elastic fibers.

Unfortunately, the breadth of available research methods in histology can not be

implemented within the same work, but even the changes found are a valuable indication of the indirect link CTD and microscopic changes in the skin and aponeurosis patients.

From this position you can do at least two things. First, the possible application of this methodology for the identification of dysplastic changes in ST microscopy. This can be done by drawing peredoperatsiey skin biopsy hernia media, and show the link changes in aponeurosis and the skin of patients leads to the conclusion about the state including the aponeurosis of the patient. Some patients in the absence of external indirect CTD dysplastic changes are found in the skin. In cases of strong family and employment history will have to make a choice in favor of the radical operation (sublay; preperitoneal prosthetic abdominal wall in the case of inguinal, femoral hernias). If, however, the presence of indirect signs CTD histologically dysplastic changes in the skin will be less pronounced, all other things being equal, there is another way to fix a hernia surgeon preference.

Second, we must continue to work but the study of CTD, the relationship of indirect signs of CTD and microscopic changes in ST hernia carriersey specialists in other areas: vascular surgeons, orthopedic surgeons and others, and only a generalization of the experience of many researchers can depict the most accurate picture of the problem of CTD in herniology.

Experimental study in design obshey was part of research on the lack of PT and complements it. The experiment was conducted on 15 adult rabbits implanted with polypropylene mesh plots 1x1 cm in the anterior abdominal wall rabbit.

10-12 months after the end of reparative processes, examine the condition of CT for degenerative changes in the periprosthetic scar. Significant fibrosis in fixation of the mesh that formed the likeness capsule around joints. This area was surrounded by areas of non-specific productive inflammation. Outside the zone of fixation grid also had a productive sites of inflammation, but less pronounced.

The presence of degenerative changes in the stacks fixing points naneobhodimost prevent the formation of these sites, which can be treated with care dobityaputem tissue overlay "forgiving" seams prifiksatsii grid and the position of the grid at a

maximum distance from metastyhoda hernia.

These measures will help to prevent local hernia carriersya aponeurosis, which is extremely important if you have CTD, especially severe. The method of choice in these cases are sublay technique for umbilical hernia, postoperative and recurrent ventral hernias, and preperitoneal prosthetic abdominal wall hernia inguinal-bedrsnoy area.

Thus, the identification of the CTD in hernia carriersy be complemented by histological examination the patient's skin with a further decision about the method of operation.

CONCLUSIONS

1. Indirect signs of connective tissue dysplasia are at 60% hernia carriersey. The incidence of dysplasia of connective tissue is at least 50% of hernia carriersey with various pathologies.
2. Connective tissue aponeuroses of external oblique and rectus abdominis muscle and skin hernia carriersey signs of connective tissue dysplasia characterized disorganization and imbalance fiber and cell structure of the connective tissue. There is an increase in the ratio of elastic and collagen fibers in the skin and aponeurosis over $0,65 \pm 0,05$ and $0,54 \pm 0,06$ respectively.
3. There is a direct correlation between the number of major indirect signs of connective tissue dysplasia and severe dysplasia morphological connective tissue aponeuroses of external oblique and rectus abdominis (Pearson $r = 0.92$, $p < 0.001$), and a direct correlation between the changes in volumetric ratios of elastic and collagen fibers in the dermis and aponeurosis (Pearson $r = 0.89$, $p < 0.001$). The degree of dysplasia of connective tissue is independent of age hernia carriersya.
4. The greatest degenerative connective tissue when implanted polypropylene mesh in the abdominal wall of rabbit found in mesh fixation suture, the width of this zone reaches 3 mm.
5. Indirect evidence of the presence of connective tissue dysplasia determines the use of methods sublay with umbilical hernias, abdominal hernias white line, postoperative and recurrent hernias and preperitonealyugo Prosthetic abdominal wall hernia inguinal-femoral localization.

PRACTICE GUIDELINES

1. To confirm the presence of connective tissue dysplasia necessarily by echocardiogram to identify dysplasia of connective tissue of the heart as one of the most frequent manifestations of this disease.
2. The external examination should be supplemented by histological study of biopsies of skin, regardless of the patient's version of ventral hernia and existing indirect signs of connective tissue dysplasia.
3. Evidence of connective tissue dysplasia, confirmed histologically, requires radical surgery to remove a hernia. Method onlay preperitoneal prosthetics and anterior abdominal wall.
4. During the operation, should be fixed mesh implant allogeneic few seams (at least 2 cm), avoiding unnecessary trauma to the tissues.

REFERENCES

1. Avtandilov GG Medical morphometry. Manual / GG Avtandilov. -M.: Medicine, 1990.-384 S.
2. GG Avtandilov Problems of pathogenesis and pathologic diagnosis of diseases in the aspects of morphometry / GG Avtandilov. - M.: Medicine, 1984. -288 S.
3. Alekseev VP Craniometry. Methods of anthropological research / VP Alekseev, GF Debets. - Moscow: Nauka, 1965. - 128.
4. Alloplastic Mr. autoplasic treatment of postoperative hernias larger / AD Timoshin [etc.] herniology (hernia). -2005.-SH.-S. 120-126.
5. Nikolai Antropov Approach for the management of patients with post-operative hernias with the risk index / N.V.Antropova, AM Shulutko / a surgeon. - 1996. - № 6,-C. 45-48.
6. Appendectomy as one of the causes of right-sided inguinal hernia / AN Shabanov [etc.] // Surgery. - 1976. - № 7. -C. 128-130.
7. Atlas of Surgery Hernia / VN Egiev [et al.] - Moscow: Medpraktika-M 2003.-228 with.
8. Baulin AV Comparative evaluation of methods of hernia repair in patients with inguinal hernias: Author. dis. ... Candidate. honey. Science / AV Baulin; PTU. - Penza, 2009. -24 S.
9. Belokonev VI Surgical problems of treating patients with hernias and solutions / VI Belokonsv, Sue. Pushkin, ST. Nahapetyan // Actual problems of clinical medicine: Sat. Scientific offers. / Ed. prof. PN Romasheva, prof. A.M. Savin / Samara State Medical University. - Samara, 2000. - S. 35-40.
- 10.Immediate and long-term results gerniokapronoplastiki / N.N.Volobuev [etc.] // Physiology and pathology of the digestive system: Sat. nauch.tr. / Crimea. State. honey. Univ. - Simferopol: Tauris, 1978. - T.76 - S. 79 –
- 11.MK beans On the prevention of recurrences after surgery popovodupahovoy hernia / MK Bobkov // Vsstn. Surgery. Grekov. - 1977. - № 1.-S. 48-52.
- 12.Borisov AE The use of polypropylene mesh for large and giant hernias of

- the abdominal wall / AE Borisov, SK Malkov, VV Toidze // News, Surgery. Grekov. - 2002. -T. 161, № 6. - S. 76-78.
- 13.AA Bochkarev The method of treatment of patients with inguinal hernias / A.A.Bochkarev, AV Chipped // Siberian honey. jury. - 2006. - № 8. -C. 5-8.
 - 14.Igor Bugaev Some clinical and electrocardiographic features associated with the combined cardial and biliary diegshasticheskim syndrome / IV Bugaev, VF Antyufev, JI.H. Budkar // Ural cardiology. Journal. - 2001. - № 2. - S. 28 - 30.
 - 15.Bulshin II External abdominal hernia / II Bulynin. - Stavropol, Stavropol book. Publishers, 1968. -232 S.
 - 16.Vafin AZ Prospects of the application of new technologies in the treatment of external abdominal hernias / A3. Vafin, AN Aydemir, GS Chemyanov // Vestn. herniology: Sat. scientific. mp. - M., 2004. - S. 23-25.
 - 17.Vereshchagin GN Systemic connective tissue dysplasia. Clinical symptoms, diagnosis, treatment approaches: textbook dlyavrachey / GN Vereshchagin. - Novosibirsk: Sibmedizdat, 2008. - 37
 - 18.Relationship loss genitals in women with joint hypermobility syndrome, connective tissue dysplasia T.IO.Smolnova [etc.] A therapist, architect. - 2004. - № 11. - S. 83-88.
 - 19.Volkov VA State of mineralization of hard tissue of teeth in adolescents with connective tissue dysplasia / VA Wolf, LA Ageev / Y Meal Krinichnaya Experimental Medicine: Sat. articles. - 2009. - Vol.1, VIP. 13. - P. 206-209.
 - 20.Voskresensky NV External abdominal hernia / NV Resurrection. -M.: Medgiz, 1959.-232 p.
 - 21.Voskresensky NV Hernia surgery abdominal Styopka / NV Resurrection, SL Gorelik. -M.: Medicine, 1965.-327 p.
 - 22.Gabovich RD Hygiene / RD Gabovich, SS Poznan, GH Shahbazian. - 3-eizd., Rev. and add. - Kiev: Vishcha School, Head Publishers, 1981. - 320.
 - 23.Gadiev SI. Application for disadvantaged gernioalloplastiki ventral hernia /

- SI. Gadiev, NG Guliyev // Annals of Surgery. -2009. - № 1. , P.25-28.
- 24.Gigiena: a textbook for schools / ed. Acad. RAMS GI Rummyantsev. - Moscow: GEOTAR - Medicine, 2000. - 608 p.
- 25.Glants C. Biomedical Statistics: Per. from English. / C Glantz. - M.: Practice, 1998. - 459 p.
- 26.Glotov AV Vascular-platelet hemostasis in disnlazii connective tissue diseases associated with it / AV Glotov O.L.Minisvich // Omsk nauch.vesta. 2005. - № 1 (30).-C. 107-110.
- 27.Gognya B.Sh. Surgical treatment of postoperative ventral hernias: Author. dis. , .. Dr. med. Science JB.SH. Gogii, State Institute of Surgery. AV Vishnevsky. - M., 2006. - 46 p.
- 28.Golovatsky BV Laparoscopic hernia repair / BV Golovatsky // Klipich. Surgery. - 1988. - № 2. -C. 76.
- 29.Gorelik MM Morphological and operative surgical risk factors of recurrence oblique inguinal hernia / MM Gorelik // Klipich. Surgery. -1987. - № 2 (542). C 1-3.
- 30.Gorelov AS Rationale and assessment of the effectiveness of polyvinylidene fluoride mesh implants for hernia repair of postoperative ventral hernias (experimental and clinical study): Author. dis. ... Candidate. honey. Science / AS Gorelov. SPb., 2008.-23.
- 31.GOST 12.1.005-88. Occupational safety standards system. General hygiene requirements to the working area. - Instead of GOST 12.1.005-76, enter. 01.01.1988.-M. Publishing House of the standards, 2008.-49.
- 32.Gostevskoy AA Justification and evaluation of new materials and methods in the treatment of postoperative ventral hernias (clinical and experimental study): Author. dis. ... Dr. med. Science / AA Gostevskoy. - St., 2008. - 16 p.
- 33.Grinberg AA Emergency abdominal surgery / AA Greenberg. - Moscow: Triad-X, 2000.-493 p.
- 34.Dysplasia connective tissue as a possible prichinnederzhaniya incontinence

- in women with genital prolapse / T. Smolnova [etal.] / Urologiya.-2001. - № 2.-P.25-30.
- 35.Connective tissue dysplasia: pulmonological aspects / G.I.Nechaeva [etc.] // Pulmonology. - 2004. - № 2. - S. 116 - 119.
- 36.Egiev VN Plastic for Liechtenstein with inguinal hernia / VN Egiev, DV Chizhov, MI Rudakov // Surgery. - 2000. - № 1,-C. 19-21.
- 37.Emslyanov SI. Endosurgery inguinal and femoral hernia / SI. Emelyanov, AV Protasov G.M.Rutenburg.-SPb.: Folio, 2000. - 172.
- 38.Eremeev AG Differentiated approach to the choice of method hernioplasty / AG Yeremeyev, ST. Wolves // Actual problems of experimental and clinical surgery: Sat. scientific. work / ed. prof. EM Mokhov. - Tver, 2001. - S. 83-84.
- 39.Ershov EG On the surgical treatment of inguinal hernia associated with connective tissue dysplasia / E.G.Ershov, I.I.Kotov // Bulletin of the international scientific surgical association. -2008.-Vol. 3, № 1.-P. 44-47.
- 40.Ershov EG The structure of the groin hernias and approaches to surgical tactics in patients with undifferentiated connective tissue dysplasia / E.G.Ershov, I.I.Kotov // Bulletin of the international scientific surgical association.-2008-Vol.3, № 1. - P. 42-44.
- 41.Zhebrovsky B.B. Atlas operations for abdominal hernias / VV Zhebrovsky, FN Ilchenko. - Simferopol, 2004. - 316 p.
- 42.Zemlyankin AA Long-term results herniotomy / AA Zemlyankin // Klinich.hirurgiya. - 1991. - № 2.-C 15-16.
- 43.Zemtsovsky EV CTD heart / EV Zemtsovsky. - St.: TOO "Politekst-Nord-West", 2000. - 115 p.
- 44.Zonov VF Justification of the choice of the method hernioplasty / VF Zonov // I.Zdravoohranenie Kazakhstan. - 1979. - № 5. - S. 72-73.
- 45.Kadurina TI Hereditary collagenosis (clinic, diagnosis, treatment, and clinical examination) / T. Kadurina. - SPb.: Nevsky Dialect, 2000. -271s.
- 46.Kadurina TI The defeat of the cardiovascular system in children with

- various inherited diseases of connective tissue / TI Kadurina / / Vestn. arrhythmology. - 2000. - № 18. - S. 87 - 92.
47. Kalmykov AS Clinical aspects of connective tissue dysplasia syndrome heart / AS Kalmykov, TS Gerasimov, PV Streltsov IfMaterialy I All-Russia. Scientific-practical conference. Conf. "Current issues of internal pathology. Connective tissue dysplasia "(29-30 June 2005). - Omsk, 2005.
48. Kanungo M. Biochemistry of aging: Per. from English. / M. Kanungo. M Press, 1982. -296 S.
49. Caravans GG Concerning the article YA Nesterenko, JB Salova "Causes of recurrent inguinal hernias," published in the journal "Surgery" for 1980 was, № 7, p. 24-29 / GG Caravans, IV Zinoviev / / Surgery. - 1981. - № 11.-S. 105-106.
50. Kishkun AA Biological age and aging: to be identified and ways of correction: a guide for physicians / AA Kiskun. - Moscow: GEOTAR Media, 2008.-976s.
51. Klyuchnikova MA Chronic gastro - a disease associated with CTD. Possible ways of correction using dietary supplements / MA Klyuchnikova, Y. Baryshev JI. Locksmith / / Iss. infant nutrition. - 2004. - Volume 2, № 1.-S. 46-47.
52. Kompleksnaya orthopedic evaluation status as an essential component of diagnosis of undifferentiated connective tissue dysplasia / AA Collars [etc.] / / Traumatology and Orthopedics Russia. - 2007. - T. 44, № 2. - S. 43-47.
53. A comprehensive approach to the issue of rehabilitation of patients with connective tissue dysplasia / GS Tanning [etc.] / / Connective tissue dysplasia: Materials sim poses. (Omsk, November 1, 2002). - Omsk, 2002. - C-160-162.
54. KoshoshevskaAA DiagnostichnioskoblivostiGOSTRglomerulonephritisinchild rensightsdisplaziispoluchno! tkanini / AAKonyushevska / / Pediatrics, obstetrics, gynecologythat. - 2002. - № 4. -C. 11.
55. Kriterii select how hernia repair surgery in ventral hernia / V.A.Samartsev

- [etc.] // herniology (hernia) -2009. - № 3. - S. 41.
- 56.Krymov AP Ventral hernia / AP Krymov. - Kiev: Gos. honey. Publishing House, 1950.280 p.
- 57.Kuznetsov V.I.Prichiny and treatment of recurrent inguinal hernia / V.I.Kuznetsov B.Ы.Барыков/Клинич.хирургия.-1983- number 2 (494)-С. 9-12.
- 58.Kukudzhanov NI Inguinal hernia / N. Kukudzhanov. - M.: Medicine, 1969. - 440 S.
- 59.Kyun LV Surgical treatment of bilateral inguinal and femoral hernia / L. Kgon, BC. Filenko // Vestn. St. Petersburg. pack-ta. - 2006. - Ser. 11, no. 4.-S. 65-71.
- 60.Lavrova TF Clinical anatomy of the hernia and abdominal wall / TF Lavrov. - M.: Medicine, 1979. - 104.
- 61.Larin VV Alloplastica soft tissue defects hernia synthetic plastics / V.V.Larin // Clinical. Surgery. - 1964. - № 7. - S. 61-66.
- 62.Lebedev JG Selecting the method of surgery for inguinal hernia / JG Lebedev // Vestn. Surgery. Grekova.-1986.-Т. 137, № 8.-S. 133-136.
- 63.Limonov IA Left ventricular remodeling in patients with hypertensive dysplasia syndrome connective tissue / IA Lemons, TS Polyatykina // Cardiovascular therapy and prevention. -2004. - № 1. -С. 36 - 39.
- 64.The methodology of supervision of patients with connective tissue dysplasia family physician in terms of prevention of early and sudden death / G.I.Nechaeva [etc.] // Rus. honey. lead. - 2004. - № 3. - S. 25 - 32.
- 65.Militsa KN Prevention of postoperative hernia / KN Police // herniology (hernia). - 2009. - № 3. - S. 28-29.
- 66.Militsa HH. Hernia hernial disease: a new look at patogenezzabolevany / NN Milica, JD Toropov, KN Police // Wedge hururg. -2009. - № 1.-S. 35-37.
- 67.Milkovska-Dmitrov T. congenital soedenitslnotkanna malostoykost udetsata

- / T. Milkovsky-Dimitrova, A. Karkashev. Sofia: Health and Physical Education, 1987. - 189 p.
- 68.Movchan KN Treatment of inguinal hernias in young patients / K.N.Movchan, SN Tatar, O. Soldatenkov // Vestn. Surgery. Grekov. -1993 - № 5-6.-S.ZZ-35.
- 69.Mozes KB Role of connective tissue dysplasia in the formation of pathology of the upper gastrointestinal tract / CB Moses, IA Osipov, AG Maltster I / Ros. Journal. gastroenterology, hepatology, koloprontologii. - 2002. - T.HP, № 5. - S. 164. - (Annex № 17 to the Journal.: Proceedings of the 8th Ros. Gastroenterol. Week (Moscow, November 18-21, 2002).
- 70.Nareyko AA recurrence rate of inguinal hernias and their causes / AA On the rail // Health Belarus. - 1976. - № I., p.19-21.
- 71.Na investigating violations of the connective tissue. Russian recommendations. - M., 2009. - 24 - (Appendix № 5 of the journal.: Cardiovascular therapy and prevention. - 2009. - № 8 (6)).
- 72.Nedifferentsirovannye dysplasia of connective tissue and their role in obstetric practice / M. Smirnov [etc.] // News. S-Petersburg. University. - 2006. - Ser. 11, no. 4. - S. 95-104.
- 73.Nelyubin.P.S.Hirurgicheskoe treatment of patients with postoperative and recurrent ventral hernias / PS Dislikes, EA. Galota, A.D Timoshin / Surgery 2007. - № 7 - S. 69-74.
- 74.Nesterenko ZV The role of congenital dysplasia of the connective tissue in the clinic of asthma in children / Z. Nesterenko, E. Nesterenko // Ukrainian Journal pulmonology. - 2000. - № 2 (Suppl.). - S. 65.
- 75.Nesterenko YA Response to the letter GG-Karavanova and II Zinoviev / YA Nesterenko, JB Sal // Surgery. - 198 - № 11. - C, 106-108.
- 76.Nikiforov Regeneration of connective tissue around allografts / AN Nikiforov, L. Artishsvskaya, I. Grishin // Morphogenesis and structure of humans and animals: Sat. scientific. Art. - Minsk, Belarus, 1970. - S. 264-266.

77. Metodika fixation implants in hernia surgery (review) / Sh Alishihov [etc.] // Endoscopic surgery. - 2008. - № 6. - S. 60-63.
78. Operatsii inguinal hernias of preperitonealnogo access prosthetic abdominal wall explants / VM Sedov [etc.] // Vestn. Surgery. Grekov. - 1996. - T. 155, № 2. - S. 33-34.
79. Osadchuk MA Metabolism of connective tissue in the pathogenesis of ulcerative colitis / MA Osadchuk, EA Islamov, TE
80. Osovskaya UFO. Clinical and echocardiographic and phenotypic criteria for mitral valve prolapse / NY Osovskaya, BK Serkova // Ukr. honey. Journal. - 2007. - T. 59, № 3. - S. 56-59.
81. Pavelko EM Analysis of the causes of recurrence of inguinal hernia / EM GTavelko // Clinical. Surgery. - 1984. - № 5. - S. 36-38.
82. Alexander Piskunov Recurrent and bilateral inguinal hernia as a manifestation of connective tissue disalazii / AS Piskunov, VN Repin, IM Tkachenko // herniology (hernia). - 2009. - № 3. - S. 35-36.
83. Plastichsskaya and reconstructive surgery of the face, trans. from English. / Ed. A.D. Peylla. - M. Bean, 2007. - 951 p.
84. Povarihina. O-A. Sinteticheskie explants in abdominal
85. Prichiny local complications in the surgical treatment of postoperative ventral hernias / VG Lubyanka [etc.] // Probl. klinich. meditsiny. 2008. - № 1 (13). - C. 28-31. EZ. Rany and wound infection: a guide for physicians / ed. MI Cousin, BM Kostyuchenok. - 2nd ed. Persrab. and add. - M.: Medicine, 1990. - 592 p.
86. Rezultaty echocardiographic examination of children with diseases of mimochevyvodyaschey / VA Gavrilova [etc.] // Med. scientific. and learning. - Lipatov // Rus. Journal. Gastroenterology, Hepatology, Coloproctology. - 2003. - T. XIII, № 5. - S. 63. - (Appendix № 21: Proceedings of the 9th Ros. Gastroenterol. Week (Moscow, 20-23 October. 2003). Metod. zhurn. - 2001. - № 3. - S. 80 - 83.
87. Rehachev VP A rational approach to the choice of surgery for inguinal

- hernia / VP Rehachev, VA Yarygin // Clinical. Surgery. - 1989. - № 2. C.1-3.
88. Romashkin-Timanov M. B. morphofunctional study of surgical treatment of postoperative ventral hernias of the abdominal wall: Author. dis. ... Dr. med. Science / MV Romashkin-Timanov; MMA. - St., 2007. - 33 seconds. 97-
Romeys B. Microscopic Technology / B. Romeys. - Moscow: Izd. Lit., 1954. - 720 S.
89. Sedov VM Current approaches to the surgical treatment of inguinal hernia slozhnyh form / VM Sedov, SD Tarbaev // Ambulatory Surgery. Hospital replacement technology. - 2002. - № 1 (5). - C. 32-35.
90. Cepon VV Connective tissue (functional morphology and general pathology) V.V. Serov, A.B. Shehter M: Medicine, 1981. - 312 p.
91. Sinenchenko GI Bezretsidiivoe surgical treatment of postoperative ventral hernia as a social problem / G. Sinenchenko, MV Romashkin-Timan, AA Kurygii // Vestn. Surgery. Grekov. - 2006. - № 1. - S. 15-17,
92. Sovremennye treatment of abdominal hernia / VV Grubnik [et al.] - Kiev: Health, 2001. - 280 p.
93. Sovremennye approaches to the treatment of inguinal hernia / AV Yurasov [etc.] // Electron. Dan. - Sharp dostupalittp :// www.med.ni
94. Sorokina LB. Morfologichni osoblivosti reparative processes of the front wall in bryushnoly eksperimentalnomu vikoristanni aloplastichnih materials / I.V. Sorokin ILLGorgol, K.Y. Police // Light of medicine that biologii. - 2008. - № 2. - S. 93 - 96.
95. Sposoby dissection of tissue pull hernioplastics / IS Kurakina [etc.] / Gsriiologiya (hernia). - 2009. - № 3. - S. 18.
96. Starodubtseva MS Kardiodynamiki condition in children with low cardiac abnormalities / MS Starodubtseva // News. SMU. - 2005. № 3 (42). - C. 137.
97. Stehun FI Inguinal hernia repair - one of the causes of infertility male / FI Stehun // Sov. medicine. - 1987. - № 1. - S. 96-99.
98. Strukturnye basis of so-called plastic properties of connective tissue / DS

- Sarkisov [etc.] // Bull. Experimental. biology and medicine. - 1998. -T. 126, № 9. - S. 244-247.
99. Takusv B.C. Deep plastic with inguinal hernias / BC Taku. - Tashkent, Medicine, 1987. - 7S with.
100. Timoshin AD Surgical treatment of inguinal hernias and postoperative abdominal wall / A.D. Timoshin - Moscow: Triad-X, 2003. - 144 p.
101. Torakalnaya Surgery: A Guide for Physicians / ed. honored. Worker. Science, Professor. LN Bisenkiva. - St. Univ au "Hippocrates", 2004. - 1414 s. /
102. Torshin YI Connective tissue dysplasia, magnesium and nucleotide polymorphisms / Y. Torshin, OA Gromov // Cardiology. - 2008. - № 10.-S. 14-21.
103. Toskin IS.D. Hernia of the abdominal wall / KD Toskin, VV Zhebrovsky. - M.: Medicine, 1990. - 272. EL
104. Trisvetova Anatomical characteristics of small anomalies of the heart / EL Trisvetova, OA Yudina // connective tissue dysplasia. - 2008. - № 1.-S. 19-20.
105. Ultrazvukovaya semiotics and diagnostics in pediatric cardiology / YM Belozarov [And others]. - M. Med. Computer Systems, 2001. -171s.
106. Usov DV Prevention of recurrence of inguinal hernia / DV Mustache, MG Kutyaikov, VF Zovov // Surgery. - 1984. - № 12. - S. 23-26.
107. Faber MI Preperitoneal prosthesis of abdominal wall hernias in the inguinal-femoral area: Author. dis. ... Candidate. honey.
108. Fedorov VD The principles of surgical treatment of inguinal hernia / VD Fedorov, SD Andreev, LA Adamian / a surgeon. - 1991. - № 1. - Pp. 59-64.
109. Federov VD Evolution of treatment of inguinal hernia / VD Fedorov, A. Adamian, B.Sh. Gogia // Surgery. - 2000. - C. 3. - S. 51-53.
110. Fedorov IV Prostheses in hernia surgery: the centenary evolution / IV

- Fedorov, AN Iron // herniology. - 2004. - K "2. - S. 45-52.
111. Feiotipichesky symptom of connective tissue dysplasia T.YU-Smoyanova [etc.] // Clinical. medicine. - 2003. - S. 42-48.
 112. London;Chicago: Rernedica Publ., 2005. - 237 p.
 113. Naidu K.A. Vitamin C in human health and disease is still a mystery? An overview/ K.A. Naidu // Nutr. J. - 2003. - Vol. 2, № 7. - P. 857-866.
 114. Nehme A.E. Groin hernias in elderly patients. Management and prognosis / A.E. Nehme // Am. J. Surg. - 1983. - Vol. 146, № 2. - P. 257-260.
 115. Peacock E.E. Internal reconstruction of the pelvic floor for recurrent groin hernia /E.E. Peacock//Ann. Surg. - 1984.-Vol. 200,№ 3.-P. 321-325
 116. Pelissier E. Inguinal hernia: preperitoneal placement of a memory-ring patch by anterior approach. Preliminary experience / E. Pelissier // Hernia. - 2006. -Vol. 10,№3.-P. 248-252.
 117. Pelvic organ prolaps and connective tissue abnormalities in Koorcan women / S.W.Bai [et al.] //J. Rcpod. Mcd.-2002.-Vol.47, №3. -P. 231 235.
 118. Prevalence and clinical determinants of mitral, tricuspid and aortic regurgitation (The Framinghani Heart Study) / J. Singh [et al.] // Лгпер. J. Cardiol. - 1999. - Vol. 83. - P. 897-902.
 119. Prevalence of aortic aneurysm in men with a history of inguinal hernia repair/ H.J. Pleumeekers [et al.] // Brit. J. Surg. - 1999. - Vol. 86, Xa 9. - P. 1L55-1158.
 120. Read R.C. Recent advances in the repair of groin herniation / R.C. Read //Curr. Probl. Surg. - 2003.- Vol. 40, № 1.-P. 13-80.
 121. Revised diagnostic criteria for the Marfan syndrome / A. Paepe [et al.] // Amer. J. Med. Genetics. - 1996. - Vol. 62. - P. 417 - 426.
 122. Risk factors associated with inguinal hernias: a case control study / J.F. Carbonell [et al.] // Eur. J. Surg. - 1993. -Vol. 159, № 9. - P. 481-486.
 123. Risk factors related to recurrence in inguinal hernia repair: a retrospective analysis / K. Jungc [et al.] // Hernia. - 2006. - Vol. 10, № 4. -

- P. 309-315.
124. Rives J. Surgical treatment of the inguinal hernia with Dacron patch / J. Rives // *Int Surg.* - 1967. - Vol. 47. - P. 360-361.
 125. Schumpelick V. *Hernien* / V. Schumpelick. - Stuttgart: Georg Thieme Verlag, 2000. - 430 s.
 126. Schumpelick V. Recurrent hernia. Prevention and treatment / V.Schumpelick,
 127. Smoking is a risk factor for incisional hernia / L.T. Sorensen [et al.] // *Arch. Surg.* - 2005. - Vol. 140, № 2. - P. 119-123.
 128. Smoking is a risk factor for recurrence of groin hernia / L.T. Sorensen [et al.] // *World J. Surg.* - 2002. - Vol. 26, № 4. - P. 397-400.
 129. Takaoka R. Vascularization around poly(tetrafluoroethylene) mesh with coating of gelatin hydrogel incorporating basic fibroblast growth factor / R. Takaoka, Y. Hikasa, Y. Tabata // *J. Biomater. Sci Polym. Ed.* - 2009. - Vol. 20, № 10.-P. 1483-1494.
 130. The epidemiology of inguinal hernia. A survey in western Jerusalem /J.H. Abramson [et al.] // *J. Epidemiol. Community Health.* - 1978. - Vol. 32, № 1. -P. 59-67.
 131. The European hernia society groin hernia classification: simple and easy to remember/ M. Miserez [et al.]// *Hernia.* -2008.-Vol. 12, №3.-P. 335.
 132. The role of matrix metalloproteinases in the pathogenesis of abdominal wall hernias / S.A. Antoniou [et al.] // *Eur. J. Clin. Invest.* - 2009. - Vol. 39, № II.-P. 953-959.
 133. The role of suture fixation on mesh contraction after abdominal hernia repair / U. Sekmen [et al.] // *J. of Invest. Surg.* - 2009. - Vol. 22, № 2. - P. 117-121.
 134. The tension free hernioplasty / I.L. Lichtenstein [et al.] // *Am. J. Surg.* - 1989. -Vol. 157.-P. 188-193.
 135. Tobin G.R. A neuromuscular basis for the development of indirect inguinal hernia / G.R.Tobin, S. Clark, E.E. Peacock // *Arch. Surg.* - 1976. -

- Vol. III, M 4. -P. 464-466.
136. Urbach D.R. Measuring quality of life after surgery / D.R.Urbach // Surg. Innov.-2005. -Vol. 12, №2.-P. 161-165.
137. Usher F. A new plastic prosthesis for repairing tissue defects of the chest and abdominal wall / F. Usher // The American Journal of Surgery. 1959. - Vol. 97, № 5.-P. 629-633.0
138. Usher F. The repair of incisional and inguinal hernias / F. Usher // Surg.