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ABDOMINAL HERNIA

Tutorial

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Tutorial done in the Department of surgery faculty and Chair of operative surgery and Clinical Anatomy of them. S.s. Mikhailova. The manual covers topography, classification, modern methods of treatment of inguinal, Femoral, Umbilical hernias. The manual is intended to prepare for practical classes in the Faculty of Surgery students 4 course medical, Pediatric, medical-preventive and dental faculties.

Tutorial press considered and recommended for ALL clinical disciplines.

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         **Introduction**

Anterior abdominal wall hernia is widely distributed. Potential gryzhenositel-every fifth inhabitant of Earth (Saveliev v.s., Kiriyenko a.i., 2009). Hernia recurrence rate after surgical treatment reaches 10% in primary and 30% for reoperation (Resurrection v.n., Gorelik s.l., 1965; Kuzin m.i., 1986).

On the results of operations over the inguinal hernias may not not be reflected and perception of hernioplasty, as operation for the budding surgeon, while classics surgeons always evaluated the "maturity" of the surgeon based on the results of these "simple" interventions.

The bulk of the patients with pahovymi hernias occur in the general surgical hospitals for elective surgical treatment, is male over the age of 30 years. Patients at a young age, usually need to be complete, and most importantly, are maximally rapid rehabilitation, including willingness to heavy physical work.

Elderly patients often have severe co-morbidities, unsuitable for solid plastics own tissues that should be considered when choosing the method of anesthesia and surgery. Many of them are settled on surgery to be able to continue to work actively. Fast rehabilitation is of no less importance.

Therefore, at present the choice of method of hernioplasty should not only be based on considerations of expediency or surgical surgical schools. The surgeon must possess different types of effective operations and be able to wisely choose the best, in each case, the method of PLASTY.

The basic principles of treatment of inguinal hernias were formulated in the late 19th century (E) . Bassini (Europe) and (N) . O . Marsy (United States). They noted the importance of the restoration of normal anatomical ratios when plastic inguinal hernias, namely attracted the attention of the surgeons to the need to restore the posterior wall of the inguinal Canal and the internal inguinal ring, revealed the key role of these structures in the prevention of occurrence of hernia inguinal region. In this book, most of the pictures are taken from "Atlas operations on abdominal wall and abdominal organs (Vojlenko v.n., Medeljan a.i., Omelchenko v.m., 1965).

**The purpose of the study topics**

To acquaint students with modern thinking on the etiology and pathogenesis of abdominal hernias. Explore the clinical manifestations of the different types of external abdominal hernia, complications, the differential diagnosis. Teach the clinical research of patients with different types of hernias. Choose the correct method of surgical intervention.

**(I) History of surgery inguinal hernias**

In the year 1884 Bassini first performed radical surgery, which has kept slanting direction the inguinal Canal (Nesterenko y.a., Gaziev, R.m. 2005).

In 1892 year Luka-Shampionner and a. a. Bobrov offered method front plastics, which after opening the inguinal Canal and remove a hernial SAC, the Aponeurosis of the external oblique internal oblique abdominal muscles and with transverse muscle of the abdomen will be attached to the pupartovoj bundle.

In 1894 year Girard perfected a method of grafting the front wall of inguinal Canal by filing internal oblique and transverse muscles to pupartovoj together with the subsequent suture of the upper flap Aponeurosis external oblique muscle zhovota over seed kanatikom.

In 1895 year Andrews suggested to sew the edge of the internal oblique and transverse muscles under kanatikom to the inguinal ligament, top cord sew outer flap Aponeurosis of the external oblique muscle.

In the year 1896 De Garey had complicated the operation using plastic peresazhennuju portnjazhnuju muscle.

In 1903 by Marc-Arthur-Zeelig has developed a method to close the defect back wall aponevrozami and fascijami without muscles.

In 1924 year R.r. Harmful produced plastic rear wall of the triangular flap, which vykraival of the rectus abdominal muscles and podshival to pupartovoj bundle behind the spermatic cord. In 1927, he offered to do poslablati incision in the vagina of rectus in plastic back wall. In the same year he made plastic by pinning the lateral leaves Aponeurosis external oblique muscle over kanatikom to aponevrozu transverse abdominal muscles.

In 1928 year Kimbarovskij applied the seam, allowing the podvorachivat edge of the external oblique Aponeurosis muscles inside, ensuring contact homogeneous fabrics. In the year 1938 podshival upper flap transverse fascia to pupartovoj bundle, then reinforce the transverse fascia lower lateral leaf of the Aponeurosis of the external oblique abdominal muscles, conducted under the seed kanatikom flap, top flap file to pupartovoj bundle on top of the spermatic cord.

In the year 1944 Canadian surgeon Shuldajs has developed a four-layer plastic method: double seam of transverse fascia and double seam United tendons with a bunch of pupartovoj.

In the year 1960 Najhus proposed preperitonealnyj approach to gryzhevomu bag and the deep hole the inguinal Canal through an incision of the internal oblique muscle with the plasticity of the posterior wall of the United and iliopsoas tendon-lonnym heavyweight with deep divisions pupartovoj ligament.

In 60-70 years, much work was carried out to search for the most suitable synthetic material for the needs of herniology, however due to the numerous complications caused by the presence of foreign material in the wound, interest gradually waned.

In 1986 year American surgeon Liechtenstein proposes the idea of hernia without tension plastics tissues around herniorrhaphy, using polypropylene mesh. It should be noted that gernioplastike femoral and inguinal hernias new method gives excellent results, virtually no relapses. Surgeons attracts technical simplicity and reliability of the operation, that has a significant impact on the distribution of network techniques in general hospitals (Shalashov S.v. et al., 2009). However, in some cases using mesh implants is accompanied by specific problems and complications (Parshikov V.v. et al., 2009). Tissue reaction to polypropylene flows through type aseptic inflammation (Marmots N.a. et al., 2002).

In 1994-1999 years held introduction Professor V.v. Grubnikom in Ukraine plastics inguinal and postoperative ventral hernias by using transplants reticulated.

In 2002 year was introduced into clinical practice polypropylene system for plastics of inguinal hernias, combining the positive characteristics of plastics and predbrjushinnoj both techniques Lichtenstein.

2004-2008 years marked by razrabatkoj technique of endoscopic preperitonealnoj and intra-abdominal inguinal hernioplasty, umbilical and small postoperative hernias.

**(II) . Inguinal hernia**

**2.1. The topography of inguinal hernia**

Unlike the femoral Canal, inguinal Canal is a normal anatomical entity that is available to every healthy person. If next to it or through it runs the hernia, inguinal hernia is talking about. Anatomic prerequisites for development of inguinal hernias are the topography of the inner surface of the abdominal wall. It is possible to identify a number of folds and indentations (pits).

Directly on the midline of the vertically Middle umbilical fold, which is a remnant of the urinary duct of the foetus, subsequently overgrown (fig. 1). In the direction from the navel to the side surfaces of the bladder, internal or medial umbilical folds, right and left. They represent the remains of obliterirovannyh umbilical arteries, covered with peritoneum. Finally, from the navel to the mid-inguinal ligament stretch, or external lateral umbilical folds formed peritoneum covering the lower nadchrevnye vessels.

Between the folds are Fossa-nadpuzyrnaja, inguinal, medial and lateral inguinal. The last two holes and are places of exit inguinal hernias.

Consider the normal topography of Ilio-groin area.

Boundaries of the area are: inside-outside edge of rectus; outside and bottom-inguinal fold; top-conditional horizontal line drawn through the front upper iliac spine- linea bispinalis. (fig. 2A).

As is well known, external abdominal oblique muscle in the groin area is represented by aponevrozom, which is the bottom edge of the back and inside, thickens and forms the inguinal ligament. The ligament is stretched between the front upper thoracic spine of the ilium and pubic bone. While the inner part of the ligament and Aponeurosis is divided into two legs-lateral, which is attached to the lobkovomu bugorku, and medial, going to simfizu. Between the legs on the outside of formed mezhnozhkovaja ligament, outside-a bunch of curl. These fiber bundles do not completely fill the mezhnozhkovuju gap, resulting in a hole-the superficial ring of the inguinal Canal. It should be noted that in its location it practically corresponds to the location of the medial inguinal fossa, lying inside.

Under the external oblique muscle of abdomen lies the internal oblique muscle. Its fibers are perpendicular to the previous one, and the lower edge of her lies higher than the inguinal ligament (fig. 2B). As a result, between the edges of these muscles is formed, filled with fiber. He called the crotch. The part of Ilio-inguinal region, in which the inguinal span and inguinal Canal, called the inguinal triangle (fig. 2A).

**Fig. 1.** The topography of the inner surface of the anterior-lateral abdominal wall.

1-straight stomach muscles; 2-parietal peritoneum; 3-median fold; 4-medial fold; 5-lateral fold; 6-lateral Fossa; 7-medial Fossa; 8-nadpuzyrnaja Fossa; 9-femoral Fossa; 10-transverse fascia; 11-umbilical artery; 12-lower nadchrevnye vessels; 13-the inner ring of the inguinal Canal; 14-seed rope or round ligament of the uterus; 15-external iliac artery; 16-external iliac vein; 17-femoral ring; 18-lacunary bunch.

Inguinal triangle limited from below the inguinal ligament, from the inside out-the outer edge of the rectus, above a horizontal line drawn through the point on the inguinal ligament, separating its outer third of the middle third.

Under the internal oblique muscle is located lateral muscle. The bottom also reaches the inguinal ligament.

Thus, the borders are: span bottom crotch-inguinal ligament, top, and inside-free edges of the internal oblique and transverse abdominal muscles. While inside of the crotch edge span muscles grow together and form a tendon called the inguinal ligament or sickle, Henle.

In pahovom channel there are four wall-front, top, bottom and back, and two holes-internal and external.

|  |  |
| --- | --- |
|  |  |
| *A front view:**ABE -Ilio-inguinal region,* *CDE -inguinal triangle* *(F) -crotch gap*  | *B-cross-section through the middle of the inguinal ligament (schematically):**1-external abdominal oblique muscle* *2-internal abdominal oblique muscle* *3-the transverse abdominis,* *4-transverse fascia,* *5-the Aponeurosis of the abdominal external oblique muscle* *6-seed rope, 7-inguinal ligament* |

**Fig. 2.** The topography of the inguinal Canal and span.

*The front wall of inguinal Canal* is the Aponeurosis of the abdominal external oblique muscle, which, in its lower part thickens and flows posteriorly, forming the inguinal ligament. Lower wall channel is inguinal ligament. Upper wall channel form the lower edges of the internal oblique and transverse abdominal muscles. In the upper part of the medial wall is crotch Crescent Moon. The back wall is represented by a transverse fascia. It should be noted that on the back channel projected medial and lateral inguinal fossa, lying, as has already been said, on the inner surface of the abdominal wall. When this plot holes further strengthened between fascia mezhjamkovoj ligament.

*The outer hole* , or shallow pahovoe ring annulus inguinalis superficialis, founded as it was already mentioned, due to the two legs of the external oblique Aponeurosis abdominal muscles.

*Inner hole* or deep pahovoe ring annulus inguinalis profundus, constitutes a defect in the transverse fascia, situated at the level of the lateral inguinal Fossa (fig. 3).

**Fig. 3.** variants of inguinal hernias (oblique slice parallel to the inguinal ligament). A lateral fossa, b-medial Fossa; 1-mezhjamkovaja ligament, 2-bundle-3 genle aponevrez external oblique abdominal muscles (front wall of inguinal Canal) 4-oblique inguinal hernia, 5-direct inguinal hernia.

*The contents of the inguinal Canal men* are the ilioinguinal nerve, a branch of the femoral nerve and seed-sexual rope.

The latter is a collection of anatomical entities surrounding the loose fiber and covered with the vaginal muscles and levator testicle. Seed kanatike located behind the VAS ductus with (a) . with remasterica and veins, anteriorly by they have testicular vein and artery grozdevidnoe venous plexus. also can be detected artery vas deferens.

*Contents of inguinal Canal in women* are the ilioinguinal nerve, a branch of the femoral nerve and sex, vaginal pouch of peritoneum and the round ligament of the uterus.

It should be borne in mind that the inguinal Canal is the site of the release of the two types of hernias: direct and oblique. In that case, if a stroke of hernial channel corresponds to the location of the inguinal Canal, meaning mouth of the hernial SAC is located in the lateral fossa, the hernia is called oblique. If the hernia is out in the field of medial fossa, it called a straight line (fig. 3).

It is also possible the formation of congenital hernias inguinal Canal. In this case, along with seed kanatikom passes vaginal pouch of peritoneum.

**2.2. classification of inguinal hernias**

**I. localization:**

1 . Unilateral inguinal hernia.

2. Bilateral inguinal hernias.

**II. By type:**

1. Direct inguinal hernias formed internal inguinal fossa.

2. Oblique inguinal hernia in the area formed the outer inguinal fossa.

3. Combined inguinal hernia (combination of several unrelated herniorrhaphy entities having separate hernial bags).

**III. Origin:**

1. congenital inguinal hernia.

2. acquired inguinal hernias.

  **IV. the stages of development:**

1. Starting an inguinal hernia.

2. Hernia inguinal Canal or channel hernia.

3. complete oblique inguinal hernia.

4. Pahovo-moshonochnaja hernia.

**On the presence of complications:**

1. Uncomplicated.

2. Complicated (nevpravimostju, flegmonoj, inflammation of the hernial SAC, koprostazom, rupture the innards in the hernia, inflammation of internal organs rupture, hurting - jelasticheskim, fecal, mixed, retrograde (W-shaped) or pristenochnym (Richter hernia).

**By: vpravimosti**

1. Vpravimye (hernial SAC contents can easily be vpravleno into the abdominal cavity through the hernia gate or vpravlyaetsya).

2. Nevpravimye (often as a result of the development of adhesions, adhesions; suddenly evolved nevpravimost previously vpravimoj hernia is a common symptom of infringement of the hernia).

**OBLIQUE INGUINAL HERNIA** begins with a small protrusion of peritoneum in deep ring of the inguinal Canal, which gradually increases due to stratification or relaxation fibers transverse fascia. Originally deep ring extends laterally, but with the increase of the hernia can expand and medially, destroying the back wall of the inguinal Canal.

       **Oblique inguinal hernias** may be congenital and acquired (fig. 4).

**Fig. 4.** Congenital (left) and acquired (right) oblique inguinal hernia (schematic).

1-peritoneum; 2-transversalis fascia; 3-small intestine; 4 — the hernial SAC; 5 — testis; 6 — tunica vaginalis testis; 7 — tunica dartos; 8 — the skin; 9 — the hernial SAC — tunica vaginalis testis; 10-fascia spermatica interna.

**Congenital inguinal hernia** closely associated with the process of lowering the testicles. Aware that egg is formed at the level of 2 ~ 3 lumbar vertebrae, adjoining primary kidney. Peritoneum covers its three sides of the egg then with the growth of the embryo starts to fall down, following the so-called conductor (gubernaculum testis). To 4-6-th month of fetal life it is already at the internal inguinal ring for 7-month passes and inguinal Canal 9 months falls into the scrotum, reaching her bottom at the time of the birth of the child. However, testis and epididymis inguinal Canal passes it VAS ductus, testicular arteries and veins, which form the arteriovenoznoe Plexus, lymph vessels. At the time of the birth of a child conductor testicular atrophies. Vaginal pouch of peritoneum may not obliterirovatsja, in this case formed a congenital inguinal hernia. While vaginal pouch of Peritoneum is a gryzhevym bag. Congenital inguinal hernias often combined with testicular or spermatic cord edema. While different options: a) of vaginal process otshnurovyvaetsja its part of that evil is present directly to the egg's (a cavity hydrops), and the upper part of the process of becoming a gryzhevym bag; b) vaginal remaining processus nezarashhennym at the level of the internal inguinal ring, obliteriruetsja at selected sites, which leads to the combination of the hernia with the spermatic cord cysts, etc.

**Acquired oblique inguinal hernia** o brazuetsja under the influence of various factors with full zarashhenii vaginal process of peritoneum. Hernial SAC is vypjachivaniem parietal peritoneum field lateral inguinal fossa, which extends into the inner ring of pahovoe, passes through the entire inguinal Canal and goes through the outer ring pahovoe. In its development it undergoes several successive stages (classification of inguinal hernias by Krymovu AP, 1929):

1. **starting oblique hernia,** when the bottom of the hernial SAC achievable only with a finger inserted in the outer hole of the inguinal Canal only when the patient's natuzhivanii;

2. **channel hernia,** in which the bottom of the hernial SAC reaches the outer holes of the inguinal Canal;

3. **kanatikovaja,** in which the hernia coming out of the inguinal Canal and is defined in the groin;

4. **pahovo moshonochnaja-oblique hernia,** in which the hernia SAC, following the move of the spermatic cord, descend into the scrotum.

   Oblique inguinal hernia, rectified.This kind of oblique hernia occurs commonly in elderly patients, amid a pronounced atrophy of musculoaponeurotic structures. In this case, the increase has been accompanied by internal extension hernia inguinal ring, particularly in the medial side. As a result of internal pahovoe ring is increasingly approaching, superficial inguinal Canal losing its slanting direction, turning into a wide opening leading directly into the abdominal cavity.

 **Rare types of oblique inguinal hernias acquired**

**The bigger an inguinal hernia.** Uncommon. The main difference between this hernia is that the hernial SAC emerges from the membranes of the spermatic cord and penetrates between the muscle layers of the anterior abdominal wall.

**Osumkovannaja inguinal hernia (*Hernia Cooper*).** This type of hernia is different because there are two hernial SAC prisoners one in other. With the abdomen only inner bag. From Outer bag, do not open the inner, penetrate the abdominal cavity is impossible.

**Okolopahovaja hernia.** The peculiarity is that of the inguinal Canal hernia goes not through the outer ring, and pahovoe through the slot in the Aponeurosis of the abdominal external oblique muscle.

**DIRECT INGUINAL HERNIA.** Direct inguinal hernia formed in the area of the medial (inner) inguinal fossa, which is associated with the weakening of the connective tissue of the posterior wall of the inguinal Canal. Hernia is not through the inguinal Canal, and only through outside his hole. Path of hernial SAC turns out direct, that specifies the name of the hernia. Unlike the oblique inguinal hernia, direct, hernial SAC is located outside of the spermatic cord.

**Direct inguinal hernia** begins with the stress in the Aponeurosis of the transverse abdominal muscles in the posterior wall of the inguinal Canal-in triangle Gesselbaha. after the start of the bulge gradually begins to curve arc aponevroticheskaja. Hernia gate begin to increase above all up, because at the bottom and medially limited blackout aponevroticheskimi structures. N.i. Kukudzhanov (1969) identifies the following types of direct inguinal hernias:

    **1.** **starting the hernia** isa small protrusion of the posterior wall of the inguinal Canal;

**2. interstitial inguinal hernia**, reaches a considerable size fitting mainly in pahovom channel behind the Aponeurosis of the external oblique muscle of abdomen;

**3. pahovo-moshonochnaja hernia**in which gryzhevoe diverticulum emerges from the inguinal Canal through the outer hole and down into the scrotum, located outside of the spermatic cord.

The main reason for the formation of inguinal hernias serves as the weakness of the posterior wall of the inguinal Canal. At all kinds of inguinal hernias transverse fascia, forming the back wall of the inguinal Canal, stretched, undergoes atrophy, razvoloknjaetsja or torn, reducing the strength of the crotch. Defines the value of the transverse fascia in the pathogenesis of inguinal hernias was reflected in the most popular classification in all countries of the world, represented by L. Nyhus and R. Condon in 1993 (Saveliev v.s., Kiriyenko a.i., 2009).

**Classification of inguinal hernias ( L. Nyhus and R. Condon in modification).**

**Type I** Oblique hernia. internal inguinal ring normal size (hernia in children).

**Type II** Oblique hernia. extended deep inguinal ring, rear wall of inguinal Canal intaktna, lower jepigastralnye vessels shifted.

**Type III.** Hernia with defect of posterior wall of the inguinal Canal:

**(A)** — Direct inguinal hernia;

**In** — Oblique hernia with extended deep inguinal ring reaching triangle Gesselbaha (pahovo-moshonochnaja, moving).

 **The recurrent hernia include IV type**:

**(A)** -direct;

**In** — oblique;

**With** — combined.

Participants of the I International Conference "modern methods of hernioplasty and Abdominoplasty using polymeric implants", held at the Institute of surgery a. Vishnevsky RAMS (Moscow, 25-26 November 2003), adopted unanimously resolution on whether to use instead of the traditional Nyhus classification. The need to implement at the present stage in the clinical practice of the most universal classification Nyhus confirmed participants also gerniologicheskoj section V International Conference "modern approaches to development and clinical use effective dressings, sutures and polymeric implants ", held at the Institute of surgery. A.v. Vishnevsky RAMS 24-25 January 2006 g. acceptance all country gerniologami Nyhus classification will help the further integration of the various gerniologicheskih schools, and most importantly, will open the possibility of comparing performance plastics of the inguinal Canal Russian surgeons with the respective results of European and American gerniologov. Clear division of categories is a prerequisite to compare treatments for hernias and frequency of their recurrence. In addition, the widespread use of Nyhus classification will make it possible to identify indications for use not only alloplasty, but that caring autoplasty for young people. Selecting the method of inguinal hernioplasty should be determined primarily by the extent of destruction of the posterior wall of the inguinal Canal and the internal inguinal ring. Repair on Lichtenstein showed the highest efficiency regardless of the type of inguinal hernia and its size. On the basis of the results obtained was selected by way of inguinal hernioplasty depending on types of hernias (Saveliev v.s., Kiriyenko a.i., 2009), are shown in table 1.

Table1

**Choice of method for plastics, depending on the type of inguinal hernia**

|  |  |
| --- | --- |
| Type of hernia by Nyhus (1993) | Method of PLASTY of the inguinal Canal |
| Type (I) The initial form of oblique hernia without an extension of the internal inguinal ring. | Posterior wall of the inguinal Canal own fabrics. |
| Type (II) Small oblique hernia with the expansion of the internal inguinal ring and saved the posterior wall of the inguinal Canal;Small direct hernia with partial destruction of the posterior wall of the inguinal Canal. | Bassini operation: selection and ShuldajsuReserve : plastic synthetic jeksplantatom (Liechtenstein, PHS), bilateral hernia-Laparoscopic repair |
| Type (III) Large oblique or direct hernia | Selection: plastic synthetic jeksplantatom (Liechtenstein, PHS).Rezerv: when bilateral hernia-Laparoscopic repair  |
| Type (IV) Recurrent hernia | Selection: plastic synthetic jeksplantatom (Liechtenstein, PHS).Rezerv: when significant changes in the anatomy of the inguinal Canal Laparoscopic repair |

It should be noted that in oblique inguinal hernia with the expansion of the internal inguinal ring, but saved the posterior wall of the inguinal Canal is appropriate ways plastics own tissues (Rudin, E.p. 2002). recently, usually appeared not floating hernia scrotum when the digital study the back wall of the inguinal Canal is well expressed. Such hernias are more often young men physical labor is well known in Russia ways plastics on E. Bassini , N.i. Kukudzhanovu in such cases is very reliable.

**2.3 treatment of inguinal hernias**

The technique of the basic operations with inguinal hernias.

**Country repair**

Incision of skin and subcutaneous tissue 8-10 cm long fully corresponds to that of traditional gernioplastike local fabrics. Aponeurosis of the external oblique muscles freed from fatty tissue only through dissection. You do not need a wide selection of both the establishment of the duplikatury. On autopsy Aponeurosis scissors and preparovochnym tupferom is allocated an inguinal ligament, the edge of the internal oblique and transverse muscles on 2-3 see the edge of the rectus muscles of the vagina and lonnyj tubercle. Finger space is allocated under the aponevrozom up in the course of the cut for later placing a mesh prosthesis.

Direct inguinal hernia hernial SAC after the allocation is not opened, and dipped in the abdominal cavity. Transverse fascia over take him one or two rassasyvajushhimi sutures.

When oblique hernia opened vaginal sheath of the spermatic cord. A small hernia sack up to neck, opened and stitched in the cervical area. When a large oblique and pahovo-moshonochnoj hernias are sometimes more appropriate to first allocate the neck of the hernial SAC, flashing her and wrap, and then completely remove the bag. Selection of hernial SAC should be tupferom not that traumatic tissue but only scissors and tweezers with coagulation of small vessels. This allows the atravmatichno to remove the bag of any size. Abandonment of part of the bag into the scrotum is impractical, especially in patients of young and mature age. After removing the bag restore vaginal wrapped the spermatic cord.

Only after the treatment of hernial SAC seed rope dissektorom go around and take on the tapes. Perform this step before committing the bag, how does the author of techniques that do not see the need, and we believe more traumatic. Then seed rope sharp by releasing from the connection whose fabrics throughout. Partially cross the muscle, the testing is unnecessary.

When oblique inguinal hernia, when inner ring expanded pahovoe or a hernia, rectified channel, multiple seams on a transverse fascia suzhivaem inner pahovoe ring.

For plastics used polypropylene mesh size 8h13 or slightly narrower with small pahovom interval. At the medial end of the grid, with rounding corners lateral end longitudinal incision is made around the 2/3 length of the prosthesis so that top was wide bransha (2/3), a narrow (1/3). At the end of the cut a round hole is made up to 1 cm in diameter for the spermatic cord.

Prepared by the prosthesis is placed under the seed rope and recorded a continuous seam vagina to prolenom pyramidal muscle down to the lonnogo tubercle, then to lonnomu bugorku not capturing the periosteum. For relapse prevention, it is important that the denture lab to specified entities not edge in edge, and was located on top of them at 1-1.5 cm beyond the line of the seam (fig. 5).

Then seed rope up and translates the same Ligature wire mesh is fixed to the rope Cooper and inguinal ligament to a level slightly lateral to the internal inguinal ring.

Then the upper edge of the grid is fixed on top of the internal oblique and transverse muscles 3-4 individual prolenovymi seams. When the edge of the grid must be approximately 2 cm above the lower edge of the muscle. You must be careful to pass the nerves in this area do not fall into the seam. After this wide bransha prosthesis overlaps narrow so that seed rope is placed in the prepared hole for him, and fixed between a prolenovym seam (fig. 6). The hole for the spermatic cord should not narrow more than 1 cm diameter. Both branshi denture on top of each other are under Aponeurosis of the external oblique muscle in the previously formed area. Aponeurosis of the external oblique muscle sewn edge in edge without tension. Then the wound is sutured as traditional plastics.

**Fig. 5.** Beginning of the fixation of the prosthesis.

**Fig. 6.** Fixation of the prosthesis to the muscles.

**Bassini Method**

Skin, subcutaneous tissue incision (fig. 7) and the Aponeurosis of the external oblique muscle of the abdomen (fig. 8) produce the same as operations at oblique inguinal hernias. Seed rope excrete all over the inguinal Canal and take away outside. Cut through the transverse fascia and start to allocate the hernial SAC of predbrjushinnoj adipose tissue. Hernial SAC with direct inguinal hernias usually has a spherical shape with a wide base. Very carefully should allocate the medial wall of the hernial SAC, located close to avoid injury of the bladder. Making sure that the wall of the SAC consists only of the peritoneum, the bag is opened (fig. 9) and examine its contents. Suturing (fig. 10) and clipping the bag (fig. 11) without his autopsy are not allowed due to the danger of injury to the bladder and other organs. If the neck of the bag is not very wide, it is stitched with internal kisetnym seam and bag from distal to the ligature. With wide neck kisetnyj seam overlay cannot be due to the fact that when prolonging it may offset the bladder with the subsequent formation of a true puzyrnoj hernia. In such cases, the hernial SAC, and eroding the peritoneum continuous ketgutovym sew up seam. When you have finished processing the hernial SAC, embarking on the plastic of the inguinal Canal by way of Bassini. After the removal of the hernial SAC seed rope relegated up and out. Then the next anchor of silk sutures at the edge of the internal oblique and transverse muscles together with the transverse fascia to the inguinal ligament (fig. 12). In the upper corner of the wounds leave enough gap so as not to undermine the seed rope. In the field lonnogo to the inguinal ligament of tubercle and the periosteum of the pubic bones file 1-2 seams edge of the rectus abdominal muscles. After alternating all seams, seed rope stack on created muscle bed and sew over it next nodal joints the edges of the Aponeurosis of the external oblique muscle of the abdomen (fig. 13).

                   **Fig. 7.** skin incision Line.

**Fig. 8.** Dissection Aponeurosis m. obligui externi abdominis.

**Fig. 9.** An autopsy of hernial SAC.

**Fig. 10.** Topstitching the cervix of the hernial SAC.

**Fig. 11.** Clipping peripheral part of the hernial SAC.

**Fig. 12.** Plastic inguinal Canal by way of Bassini. Podshivanie mm. obliguus internus abdominis transversus abdominis, rectus abdominis et to lig. inguinale behind funiculus spermaticus.

**Fig. 13.** Plastic inguinal Canal by way of Bassini. Stitching the inner and outer flaps Aponeurosis m. obligui externi abdominis atop funiculus spermaticus.

**Postemskogo Method**

Plastic Postemskogo is the complete elimination of the inguinal Canal, inguinal period and in the creation of the inguinal Canal with a completely new direction. Under the seed kanatikom sew muscles so that they densely adjoined to it but not sdavlivali it. The edge of the rectus muscles together with the United suhozhiliej the internal oblique and transverse muscles at the pubic (kuperovoj). Next top flap Aponeurosis, together with the internal oblique and transverse muscles file to by-podvzdoshnomu and tjazhu to the inguinal ligament. The bottom flap Aponeurosis external oblique muscle, held under the seed kanatikom record over the top flap Aponeurosis. The newly formed "the inguinal Canal" with seed kanatikom must pass through the musculo-aponeurotic layer in the slanting towards the rear to front and inside out. Seed rope laid on the Aponeurosis of the layer above it and sew the skin and subcutaneous fat.

**Girard's Method**

 Girard's method is to strengthen the front wall of inguinal Canal over the spermatic cord. After processing and clipping hernial SAC retard in the side flaps of the Aponeurosis of the external oblique abdominal muscles and at the hub of silk sutures edge internal oblique and transverse muscles to the inguinal ligament on top of the spermatic cord. It is necessary to avoid grasping the ligature the ilioinguinal nerve, because it leads to infringement of the painful and prolonged pain in irradiiruth in the groin. First silk thread stitch edge of the internal oblique and transverse abdominal muscles and then groin ligament. To prevent damage of the peritoneum and abdominal organs at the time of sewing the muscles beneath them lead finger or spatula. To avoid damage to the femoral vessels inguinal ligament should not puncture too deep for this it is better to use small-diameter needle. Just impose 5-7 silk sutures, which are then knotted. Then throughout the cut anchor silk sutures at the inner flap Aponeurosis to the edge of the inguinal ligament. The first seam impose in the area lonnogo tubercle; knotting it, be sure not to suffer deprivation whether seed rope. The outer flap is placed on top of the Aponeurosis of the internal (like floors coats) and file number of nodal silk sutures to last. The newly formed the outer ring of the inguinal canal should ignore end of your index finger. As a result, manufactured plastics inguinal Canal creates a pretty rugged musculo-aponeurotic layer consisting of the internal oblique, transverse abdominal muscles and external oblique Aponeurosis dublikatury muscles, which prevents the exaggeration the innards and the formation of a hernia. After PLASTY of the inguinal Canal in the hypodermis (if it is well developed) impose several stitches. Skin sewn up near junction of silk sutures.

**Way To S.i. Spasokukockogo**

Way To S.i. Spasokukockogo is that an internal flap Aponeurosis of the external oblique abdominal muscles along with the edges of the internal oblique and transverse abdominal muscles at the inguinal ligament one next nodal silk sutures. Then the outer flap Aponeurosis file over internal.

**Way To Ma Kimbarovskogo**

Way to Ma Kimbarovskogo after processing and clipping hernial SAC inner flap cleaved Aponeurosis and underlying muscles stitch from outside to inside, the title on 1 cm from the edge of the cut. Needle hold second only over the edge of the inner flap Aponeurosis, going from the inside out, then the same FLOSS stitch edge of the inguinal ligament. Imposing four-five stitches, alternating between them knotted; When the edge of the inner flap Aponeurosis flows under the edge of the muscles and tight contact with the inguinal ligament. On top of the inner flap at the outer flap Aponeurosis.

**Laparoscopic transabdominal**

**preperitonealnaja for repair Korbittu**

Position the patient on the operating table — on the back with a rolled-up legs. The head end of the table is lowered to 200. The monitor is located in the legs of the patient, the surgeon is on the side opposite to the hernia. After the audit, the abdominal cavity on the 150-200 bends over table plane in the opposite direction from the localization of the herniation (Sedov V.m., Guslev a.b., 1995). Tools to perform laparoscopic hernioplasty includes:

1. Trocars 12, 10 and 5 mm

2.5 mm curved scissors

3. Exciting tongs, dissector

4. Polypropylene mesh

5. Telescope with oblique Optics (300)

6. Mini retractor (5 mm)

7. A stapler for fixing grid

Skin incision is made 1 cm in length just above the navel in the abdomen the needle is introduced Veresha and pnevmoperitoneum adducts. Through this incision is done 10-mm body cavity for laparoscope and insufljaciju gas. After the introduction of the optics produce audit of the abdominal cavity. It is important to explore both the inguinal area not to Miss starts hernia on the opposite side. In obese patients may have incision and trocar introduction below the navel. Pararektalno, at the level of the navel or slightly below, on the side of the hernia injected 5-mm body cavity. At the same level on the opposite side you enter 12-mm body cavity. The surgeon works through tools 5 and 12 mm trocars, Assistant manages the endoscope camera.

Intervention starts with grasping and vvorachivanija in the abdominal cavity of hernial SAC. You then cut parietalnogo sheet of peritoneum over the top edge of the hernial gate, which extended down to the medial and lateral directions. Flap of peritoneum along with gryzhevym bag blunt by separated from underlying tissues downwards. When oblique hernia wall hernial SAC from the spermatic cord otpreparovyvaetsja, with dense fibrous bands intersect with scissors with coagulation. In mobilizing peritoneal graft should be careful not to damage the bottom jepigastralnye vessels.

Starting with the medial side, dissektorom or scissors secrete

Crescent Aponeurosis (aponeurosis Arcus transversalis), i.e. the upper boundary of triangle Gesselbaha. This is followed by a selection of the ligament and tubercle lonnogo Cooper. Lower jepigastralnye vessels are the boundary between the two gryzhevymi. Laterally emit the lower edge of the internal oblique abdominal muscles and ilio-pubic tract.

Elements of the spermatic cord dissektorom stand out from places it over the edge of the inflection of internal inguinal ring. At this stage it is better to use a dissector, failing that you can use Mini retractor. Through 12 mm body cavity through the abdominal cavity liner vstavochnoj enter mesh prosthesis previously preparing it on a manipulative table. Prosthesis size, on average, 8 h 12 cm (more exact can be measured using a special tool with a ruler). Departing on 1/3 from the edge of the grid with the shortest side of the denture, incision length about 5 cm and a small, up to 0.5 cm, the hole for the spermatic cord. Edge of the prosthesis machined scissors to differentiate between external and internal edge cut. The prosthesis is minimized and immersed tube in vstavochnuju metal sleeve with a diameter of 10 mm.

In the abdominal cavity prosthesis unfold and narrower edge out under the seed in kanatikom mobilized lateral side.

Mesh was so that it closed medial and lateral inguinal and femoral Fossa and prilezhala to the bone and aponevroticheskim entities groin area (from the lonnogo tubercle medially to almost the front upper iliac spine laterally and Cooper's ligaments below up to the lower edge of the internal oblique muscle at the top). Through a 12-mm body cavity is entered the special mesh and fixed prosthesis stapler staples. For fastening of prosthesis is commonly used 5-9 paper clips. Mesh fixation is performed sequentially, first the top and then bottom of the grid so as not to damage seed rope and lower jepigastralnuju artery.

Suturing device for laparoscopic hernioplasty have a diameter of 12 mm with Staples 4 tall or 4.8 mm. The working part of the apparatus is rotated 360 degrees.

Fixation of the prosthesis can be implemented using multiple single-shot rifle stapler Ethicon, the company "has a diameter of 12 mm.

For fixation of the prosthesis to the bone formations convenient device, having a diameter of 5 mm and spiral locking elements.

The final step is mapping the peritoneum and stitching edges through them using the stapler for the isolation of alloplasticheskogo material from contact with the organs of the abdominal cavity organs. This manipulation must be to decrease the pressure in the abdominal cavity up to 8-9 mm Hg. Church, that when intelligence edge Peritoneum is not prorezyvalis. More reliable technique for peritonizacii prosthesis using continuous weld ligaturnogo, but technically it is more complicated and takes longer. The scope of the operation is washed, removed blood clots that formed during the selection of hernial SAC. Tools that extract, eliminate pnevmoperitoneum and take out trocars. In the Aponeurosis of the defects after the introduction of large diameter troakarov is sutured. The edges of skin wounds and punctures on maps placed bandages. To date, the contraindications of endovideosurgical gernioplastike minimized. General contra-indications include diseases and conditions of the patient, in which generally questionable justification for laparoscopy intervention as an attempt by its conduct can lead to serious complications. Absolute contraindications are pregnancy, concomitant diseases and conditions under which general anesthesia is contraindicated planned and imposing a busy karboksiperitoneuma, elective surgery. Relative contraindications can be considered transferred earlier surgery on organs of small pelvis and abdomen, strangulated inguinal hernias, giant pahovo-moshonochnye hernia. Extreme degrees of obesity, previously mentioned as a relative contraindication, currently is not. In patients with spaechnym process question the feasibility of endovideosurgical hernioplasty solved only after doing diagnostic laparoscopy. Should apply standard precautions to prevent complications in the primary "blind" laparocenteze-use Veress needle, laparocentesis in atypical locations, use videotroakara, Hasson. Installation of subsequent troakarov should be under Visual control. Compared to traditional interventions jendovideohirurgicheskaja repair has a number of advantages but also some disadvantages. The benefits include pathogenetic validity of prosthetics without pulling the posterior wall of the inguinal Canal to the transverse fascia, small injuries, early rehabilitation and quality of life after surgery, good cosmetic effect, the low percentage of relapses and complications, perform diagnostic laparoscopy, the ability to group operations, including simultaneous bilateral and combined treatment of hernias. The disadvantages include the need for general anesthesia, the complexity of mastering techniques (Strizheleckij v.v., Rutenburg g.m., Guslev a.b., 2009).

**(III) . FEMORAL HERNIA**

**3.1.the topography of femoral hernia**

            Femoral hernia, leaving the abdominal cavity and leaving on a surface, forming the so-called femoral Canal. It should be noted that the femoral Canal is not normal anatomic education and healthy people missing.

In a healthy person the space behind the inguinal ligament (podpahovyj period) divided by using pozvzdoshno-grebeshkovoj arc on the two loopholes-muscular and vascular (fig. 14). With all the muscular lacuna is filled (m) . iliopsoas It passes close to the femoral nerve. Vascular lacuna with medial side lightly veiled by the lakunarnoj ligament, and through its outdoor Division pass femoral artery and vein. Between vessels and a bunch of vacuum formed in the vascular pole, is lymph node Rozenmjullera-Pirogov. This Fossa is somewhat broader in females than in males, and in certain circumstances, becomes a place of exit femoral hernia.

**Figure. 14.** muscular and vascular lacunae.

1-inguinal ligament; 2-ilium; 3-pozvzdoshno-grebeshkovaja arc; 4-comb fascia; 5-lacunary bunch; 6-lateral cutaneous nerve of thigh; 7-iliopsoas; 8-femoral nerve; 9-femoral artery; 10-femoral vein; 11-cellulose; 12-node Rozenmjullera-Pirogov

A person with a femoral hernia, as mentioned above, you can detect the femoral Canal, which secrete the inner ring (exit place of abdominal hernia), outer ring (exit place hernia outwards), and channel with their walls (fig. 15).

The inner ring of the femoral Canal has four walls. From the front it is limited to the inner surface of the inguinal ligament; back comb binder. The inside of the ring lies the lakunarnoj edge of the ligament. The outside ring is limited to wall the femoral vein. As a rule, infringement of femoral hernia occurs exactly at the level of the inner ring, and when performing herniotomy surgeon should dissect medial wall rings, there are a bunch of lakunarnuju. However, it should be remembered that the lakunarnoj bundle can either arterial anastomosis or obturator artery, and the intersection of the lakunarnoj ligament with improper technique can lead to massive blood loss. Blood loss can be so great that a vessel lying on the bundle, historically called "Crown of death", because if it is damaged, he moves away from the ligament deep into and removing it without expanding access is almost impossible. At the same time improving access surgeon lost time, and the patient died. In connection with this section must be conducted strictly bundles controlled by vision. When it detects a vessel lying on the bundle, you must wrap it or gently push.

**Figure. 15.** the topography of the femoral Canal on a sagittal slice.

*And-the inner ring of the femoral Canal, b-the outer ring of the femoral Canal; 1-inguinal ligament, 2-comb Binder 3-upper Horn serpovidnogo edge 4-grebeshkovaja 5-grebeshkovaja fascia, muscle, 6-bottom rig serpovidnogo edge.*

The outer ring of the femoral Canal is located in the frontal plane and meets hiatus saphenus. It are three wall-top forms the top Horn serpovidnogo edges, bottom-bottom rig serpovidnogo edge. Side wall forms a large hole through the subcutaneous vein leg. when leaving the ring hernia may perezhat Vienna, resulting in edema of the lower limbs.

The walls of the femoral Canal are: front-inguinal ligament and upper Horn serpovidnogo edge, the rear-fascia covering the comb muscle. The lateral wall of the channel represented by the femoral Vienna. Thus, the femoral Canal is in the shape of a triangular prism (fig. 15, 16).

**Fig. 16.** topography of femoral hernia.

1 — lig . inguinale ;-2 lig . lacunare ; 3-femoral hernia; 4- (a) . et v. pudenda externa; 5 — m. pectineus ;-6 (v) . saphena magna; 7- lnn. inguinales profundi; 8- a. et v. femoralis ;-9 (a) . et v. epigastrica superncialis.

However, it should be borne in mind that all described above applies only to so-called "typical" femoral hernias. Gryzhevoe diverticulum may also pass through other sites and even muscle lacunae, and therefore entails the following types of femoral hernias (topography):

Femoral hernia muscular lacuna or muscular-lacunary hernia-passes out from the femoral vessels within the muscular lacuna.

Okolososudistye femoral hernia-pass or anteriorly (presosudistaja hernia) or posteriorly (pozadisosudistaja hernia) from the femoral artery and vein. In these cases, usually the hernial SAC is located in the sulcus between the artery and Vienna.

A typical femoral hernia-passes inside from the femoral vein (described above).

Hernia lakunarnoj ligament-passes through the formed or congenital defect lakunarnoj ligament. Given the small size of the defect, often restricted.

             **3.2.lassifikacija femoral hernias**

1) initial form (hernia does not extend beyond the internal orifice of the femoral Canal).
2) Interstitial form (hernia is located in the hip channel).
3) full form (hernia comes out of the femoral Canal in hypodermis)

**3.3. treatment of femoral hernias**

Apply several kinds of hernioplasty.

**Way Of Lockwood-Bassini**

Way of Lockwood-Bassini (fig. 17). The cut makes parallel and below the inguinal ligament on gryzhevym vypjachivaniem. After herniotomy, and delete both SEW bag GRA 3-4 stitches groin and upper pubic ligament, from the lonnogo tubercle to the confluence of great saphenous vein in the femoral vein. The second number of stitches is sutured, outer hole bedren leg channel, sewing edge wide crescentic fascia of the thigh and grebeshkovuju fascia.

**Fig. 17.** Way Of Lockwood-Bassini.

**Way To Rudzhi-Parlavechchio**

Way to Rudzhi-Parlavechchio carry out from the crotch of access. After opening the inguinal Canal and dissecting the transverse fascia, pushing proximally predbrjushinnuju cellulose, secrete GRA zhevoj bag, bringing it out of mischief for antiquing and performing channel section by regular hernia. GRA zhevye gates close, podshivaja internal oblique and transverse muscles together with the transverse FAS to the top by the pubic and the inguinal ligaments. Plastic front wall of inguinal Canal produce a dublikatury sizing ruzhnoj for oblique Aponeurosis abdominal muscles. Femoral hernia recurrence rate with different ways of hernioplasty higher than at PAHO howl gernioplastike. In this connection in recent years for the treatment of femoral hernias operational Opera use either Polish or technique laparoskopiche alloprotezirovanie femoral Canal without the used fabrics sshivaemyh IU todike Liechtenstein. Laparosko picheskij hernioplasty method described in the section "inguinal hernias.

**Way Of Liechtenstein**

Way of Liechtenstein when femoral hernia is the following. After herniotomy and gleam in the hernial SAC removal pelvis Ka NALA injected propylene grid collapsed in the form of a roll. Then it hides the seams to separate bearing pupartovoj and grebeshkovoj ligaments without natjazhe tion of the aforementioned anatomical structures. This method is especially CE Nene in the surgical treatment of recurrent hernias.

**(IV) Umbilical hernia.**

**4.1. The topography of umbilical hernia**

          Umbilical ring is a hole in the midline, usually closed navel. On its location corresponds to approximately the middle of the belly-button distance between mechevidnym and shoot lobkovym simfizom. It is a scar, retracted generated from the remnants of tissues anatomical entities passing through it during fetal development. The fetus through the navel on the lower semi-circle two umbilical arteries and the urinary duct, and the top is the umbilical vein. After birth they are vessels and they are converting to ligament-umbilical vein turns into a round ligament of liver, urinary duct is in the median bundle, umbilical artery-in internal ligament. It should be remembered that the dysfunctional process goes in different people at different speeds, there may be situations where the round ligament of the liver has clearance, which communicates with the circulatory system. Therefore, if the abdominal wall is cut in the navel area last, you must crawl left to prevent possible intersection of circular connection of the liver.

After birth and falling away umbilical cord umbilical ring is tightened with the formation of the umbilical scar. When this tripe is more durable in its lower part. Layers constituting the navel skin, which represented srashhena with scar tissue, umbilical fascia and peritoneum. When the umbilical fascia, being part of the intra-abdominal fascia does not always reach the navel, and often, even before reaching it, closes the ring is not completely. In this regard, this place may be Umbilical hernias. Another important element is the presence of a belly button Clinical Anatomy here a large number of blood vessels, especially venous. The navel is the junction of three venous systems of the human body: Portal vein system and systems of the upper and inferior vena cava.

**4.2. classification of Umbilical hernias**

All umbilical hernia just conventionally divided into congenital and acquired. The Umbilical hernias are vpravimye (normally not deliver special problems) and nevpravimye.

1. congenital Umbilical hernias can be determined immediately after the birth of a child. These children in the navel area is marked bulging often rounded shape, which increased when the child cries. The cause of congenital hernias are usually the umbilical ring expansion and slow healing of the umbilical ring. Congenital umbilical hernia, if it doesn't bother the child and does not tend to affect up to 3 years of age watch conservatively, with a high probability of self her disappearance.

2. acquired umbilical hernia, hernia emerging in the process of life, are more common in women after 40 years.

        **4.3. Treatment of Umbilical hernias**

Kinds of operations (repair):

1. the traditional plastic local fabrics produced on the methods of Sapezhko and Mayo. Technique: edges are sutured the umbilical ring Aponeurosis in two layers, either in vertical or transverse direction.

The main shortcomings of the operation:

a long period of rehabilitation (physical load of up to 1 year);

high risk of relapse.

**The Way Mayo (Mayo)**

The Way Mayo (Mayo). Spend two polulunnyhrazreza leather in the transverse direction around hernias '. Flap capture clips Kocher and the contour of the Aponeurosis around herniorrhaphy for 5-7 cm (fig. 18). Gryzhevoe ring dissect in the transverse direction to probe Kocher. Selecting the neck of the hernial SAC, it is opened, the contents of the view and set into the abdominal cavity. In the presence of adhesions of hernial contents with gryzhevym bag is interspersed with spikes. Hernial SAC from around the edge of hernial ring and remove together with the skin flap. Peritoneum continuous ketgutovym sew seam (fig. 19). If the peritoneum srashhena with the edge of hernial ring, then sew it together with the aponevrozom. Then the aponevroticheskie patches imposes several u-shaped silk sutures so that when opening them one naslaivalsja to another Aponeurosis flap (fig. 20). The free edge of the upper flap at a number of nodal joints to the bottom (fig. 21). Skin incision sewn up a few anchor silk sutures.

**Fig. 18.** Umbilical hernia Operation by way of Mayo. skin graft Delamination and highlighting the cervical hernia.

**Fig. 19.** Umbilical hernia Operation by way of Mayo. Suturing the peritoneum continuous seam.

**Fig. 20.** Umbilical hernia Operation by way of Mayo. Podshivanie lower flap to the top next loskutu Aponeurosis anchor the n-image-stitching.

**Fig. 21.** Umbilical hernia Operation by way of Mayo. Podshivanie upper flap Aponeurosis to the lower loskutu near nodal joints.

**Way To M. Sapezhko**

Way To M. Sapezhko. Skin incision spend over gryzhevym vypjachivaniem in the vertical direction. Allocate the hernial SAC of subcutaneous fat, which the contour of the Aponeurosis in hand at 10-15 cm. Gryzhevoe ring cut through up and down along the midline ( Fig. 22). handle bag Hernia generally accepted method. After that, the next anchor of silk sutures at the cleaved edge Aponeurosis one side to the back wall of the rectus abdominal muscles of the opposite side (fig. 23). the remaining free edge Aponeurosis stack on the front wall of the rectus abdominal muscles of the opposite side and also fix the number of nodal silk sutures (Figure 24). As a result, the vagina recti layered on top of each other on the white line as floors coats. Operation complete sutures on the skin. In case you need a few seams connecting the subcutaneous fatty tissue.

**Fig. 22** Umbilical hernia operation by way of k. m. Sapezhko. Dissection of hernial ring probe Kocher.

**Figure. 23.** the operation of umbilical hernia by way of k. m. Sapezhko. Podshivanie edge of the right flap to the back of the Aponeurosis of the vagina left rectus.

**Figure. 24.**Operation of umbilical hernia by way of k. m. Sapezhko. Podshivanie the left flap to the front of the vaginal wall Aponeurosis right rectus.

2. using Plastic mesh implants. There are two ways to install grids.

and) grid is placed over the aponevrozom (ring out) directly under the skin. This operation is performed in cases where it is impossible to repair the hernia gate because of their large size.

b) grid is placed under Aponeurosis (under the umbilical ring). This is the best way to treat the umbilical hernia. Disadvantages of this method have no operative treatment.

Advantages:

short rehabilitation period (not more than 1 month even for athletes);

low relapse rate (less (less than 1%);

operation executed under any kind of anesthesia.

          **(V) TEST TASKS.**

Select one or more correct answers.

1. The LARGEST ARTERY passing in PAHOVOM CANA-

LES CALLED

1) inguinal artery

2) iliac artery

3) testicular vein artery

4) of Ilio-inguinal artery

2. place the SEAM EDGES of the INTERNAL OBLIQUE and TRANSVERSE ABDOMINAL MUSCLES is CALLED

1) inguinal ligament

2) iliac ligament

3) mezhnozhkovaja ligament

4) bunch of Henle

3. MEZhJaMKOVAJa BUNDLE is

1) ligament, located between the lateral and medial pahovymi holes

2) ligament, located between the medial and nadpuzyrnoj holes

3) ligament, stretched between the legs of the Aponeurosis of the external oblique abdominal muscles

4) all the answers are incorrect

4. FRONT WALL of INGUINAL CANAL is

1) Aponeurosis of the abdominal external oblique muscle

2) lower edge of the internal oblique and transverse abdominal muscles

3) outer edge of rectus

4) transverse fascia

5) inguinal ligament

5. The UPPER WALL of the INGUINAL CANAL is

1) Aponeurosis of the abdominal external oblique muscle

2) lower edge of the internal oblique and transverse abdominal muscles

3) outer edge of rectus

4) transverse fascia

5) inguinal ligament

6. The LOWER WALL of the INGUINAL CANAL is

1) Aponeurosis of the abdominal external oblique muscle

2) lower edge of the internal oblique and transverse abdominal muscles

3) outer edge of rectus

4) transverse fascia

5) inguinal ligament

7. The POSTERIOR WALL of the INGUINAL CANAL is

1) Aponeurosis of the abdominal external oblique muscle

2) lower edge of the internal oblique and transverse abdominal muscles

3) outer edge of rectus

4) transverse fascia

5) inguinal ligament

8. of the TOTAL LISTED ONLY ONE ANATOMICAL EDUCATION CAN BE found in PAHOVOM CHANNEL both men and women

1) seed rope

2) round ligament of the uterus

3) testicular artery

4) inguinal branch of ilioinguinal nerve

5) levator muscle testing

9. The RESTRAINT PERIOD is

1) space between the inguinal ligament and the lower edges of the internal oblique and transverse abdominal muscles

2) lapse under the inguinal ligament

3) space between the internal oblique and transverse abdominal muscles

4) no answer

10. The INNER RING is located in the CHANNEL PAHOGO

1) nadpuzyrnoj Fossa

2) lateral Fossa

3) medial Fossa

4) vascular vacuum

11. GYZhEVOGO CONTENTS of the BAG CAN BE

1) small intestine

2) stomach

3) pancreas

4) liver

5) bladder

12. The MOST COMMON WAY of SURGICAL TREATMENT of INGUINAL HERNIA is

1) Bassini operation

2) hernia repair on Mayo

3) repair on Liechtenstein

4) operation Postemskogo

13. INNER RING of PELVIS RING FEMORAL CANAL is located in the

1) vascular vacuum

2) muscle gap

3) lakunarnoj tripping over cords

4) in all of these cases

14. The FRONT WALL of the FEMORAL CANAL is

1) inguinal ligament and partially upper Horn serpovidnogo edge own the fascia of the thigh

2) only inguinal ligament

3) grebeshkovaja fascia

4) femoral vein

15. The POSTERIOR WALL of the FEMORAL CANAL is

1) inguinal ligament

2) are a bunch of

3) grebeshkovaja fascia

4) femoral vein

16. The LATERAL WALL of the FEMORAL CANAL is

1) inguinal ligament

2) are a bunch of

3) grebeshkovaja fascia

4) femoral vein

17. The OUTER RING of the FEMORAL CANAL is:

1) hiatus saphenus

2) vascular lacuna

3) muscular lacuna

**(VI) . STANDARDS OF RESPONSES**

|  |  |  |  |
| --- | --- | --- | --- |
| NO. | Response | NO. | Response |
| 1 | 3 | 10 | 2 |
| 2 | 4 | 11 | 1, 2, 4, 5 |
| 3 | 1 | 12 | 3 |
| 4 | 1 | 13 | 4 |
| 5 | 2 | 14 | 1 |
| 6 | 5 | 15 | 3 |
| 7 | 4 | 16 | 4 |
| 8 | 4 | 17 | 1 |
| 9 | 1 |   |   |

**(VII) Recommended literature.**

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