

Modern approaches to the treatment of postoperative hernias

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Annotation. One of the most common surgical pathologies are external abdominal hernias. The share of postoperative ventral hernias (POVH) accounts for up to 15-18% of the total number of patients with abdominal hernias. More than 1.5 million surgical interventions for ventral hernias are performed annually in the world, in the CIS countries this figure exceeds 200,000 operations. Modern studies have shown that the surgical treatment of patients with POVH should be based on a personalized approach, taking into account the existing concomitant pathologies, risk factors, surgical potential of the operating go doctor and hospital.

Key words: *ventral hernia, allohernioprosthesis, operation method.*

One of the most common surgical pathology are external abdominal hernias. Ha share postoperative ventral hernias (PVH) occur up to 15-18% of the total number's patients with hernias belly. Every year in the world are carried out more than 1.5 million surgical interventions by about ventral hernias, in the CIS countries this indicator exceeds 200,000 operations. And frequency POVH development directly proportionally number completed laparotomy. POVH develops in 5-30% of patients after middle laparotomy. Required note that _ hernia recurrence after operations occurs in 29% of patients, after elimination first recurrence 35%, second 39% [25,26,47].

There is many ways plastics hernial gate at POVH. Most widespread method was plastic with the use local fabrics, frequency execution which from year to year decreases. At the same time hernia recurrence in patients composed up to 20%, and in case of complicated form exceeded 40%. Solution problems treatment patients with hernias belly found in a wide application allomaterials. When strengthening abdominal walls mesh endoprosthesis frequency relapses decreased up to 2-3%, but increased risk development complications co sides postoperative wounds in early and late postoperative periods. One of the main reasons for the increase frequencies postoperative there was a fact availability alloprosthesis as " foreign bodies " in tissues front abdominal walls. This contributed to development various wounded complications in the form gray, suppuration postoperative wounds that _ often led to rejection allograft [25,27,43].

Main link successful treatment patients with POVH is liquidation hernial defect in conditions damaged atrophic cicatricial fabrics front abdominal walls [12,55]. logical is application allomaterials, however, the path to this the decision was long that connected with the fact that on a stage formation methods alloplasty for POVH many surgeons faced a colossal quantity local complications, due to what many authors even in the present time are supporters autoplasty [3, 11 , 35]. Ho, if for small sizes hernial protrusions autoplasty has place to be and demonstrates good results, then application this techniques for large and giant hernia associated with more quantity complications co sides postoperative wounds and relapses hernia in the distant postoperative period [6, 14].

In herniology first systematized species data _ hernioplasty were presented Toskin K.D., Zhebrovsky B.B. (1983):

1. Autoplasty:
 - 1.1 fascial - aponeurotic,
 - 1.2 muscular - aponeurotic,
 - 1.3 muscular;
2. Alloplasty (application various implants);
3. Mixed plastic hernial gate [26,36].

Implementation laparoscopic methodology treatment of abdominal hernias divided surgical approaches to this pathology on a open and laparoscopic [34,55].

Regardless from method operational treatment essence x based on a similar principles: high integration allograft, prevention adhesion bodies abdominal cavities to the implant and formation lasting muscular - aponeurotic case [19,38].

The path to modern hernioplasty was thorny by reason long search most optimal allomaterial for plastic surgery hernial gate. Will fair say that _ overwhelming most surgeons use synthetic polymeric materials for hernioplasty, however, a number of authors publish sporadic research on _ results plastics own tissues [3,11,29].

A number of publications dedicated use solid cerebral shells in the form autograft [3,29]. Ismailov S.I. (2022) in review article introduced research demonstrating _ abbreviation tension tissues and lack recurrence of POVH when using solid cerebral shells together with mesh implant [17].

B foreign sources in the last time appears a lot data on the decline numbers suppuration postoperative wounds when using biomaterials for POVH plastic surgery, as well as accelerated neovascularization and fast formation connective tissue case [40]. However, use biological implants associated with an increase cost treatment this categories sick that _ limits x use in routine surgical practice [10].

In Russian publicationx hernioplasty using _ mesh implant is divided on a reconstructive and corrective alloplasty front abdominal walls. First _ cases in progress complete recovery linea alba, in second same - closing hernial gate muscular - aponeurotic layer abdomen with plasty defect allomaterial [6,30].

Implementation methodology sublay and inlay significantly shortened frequency relapses postoperative hernias [49], while time how methodology online is operation choice for simplicity technical execution and enough high clinical efficiency [4, 8, 61]. According to results largex research on _ results various species hernioplasty for POVH, technique sublay is most preferable, having least quantity complications and relapses [44]. Frequency development hernia recurrence after methods onlay and sublay composes about 19%, and after supra-neurotic fixations prosthesis relapses arise more common: 17% versus 12% [46,50].

When fixing allograft over aponeurosis main complications is long-term selection serous fluids and risk necrotization skin with a wide mobilization aponeurosis from subcutaneous fatty fiber [20,36]. However given that _ data complications not are life- threatening patients, the technique onlay in mind ee simplicity execution maybe count most optimal in patients over 60 years old with several accompanying pathology [24,37,47].

Subneurotic fixation allograft fraught with serious abdominal complications such _ how adhesive disease, formation fistula, penetration nets in the bladder, infringement loops thin intestines between mesh and front abdominal wall [21,35]. Exactly by this cause in the world most surgeons prefer fix allograft preperitoneal for safety this methodology and low date relapses postoperative hernias (9%).

A number of surgeons are adherents operations Ramirez OM (2010), which is in relaxation muscular - aponeurotic layers, while produced complete reconstruction front without abbreviations volume abdominal cavity [58]. However on a our view injury inflicted muscular - aponeurotic layer, given operations, leads to development complications and relapses in the distant postoperative period. Datax about distant results after operations Ramirez OM not are reliable, rare observations report 5–8% relapses. Indications for use methods Ramirez OM are considered giant POVH when produce hernioplasty standard method impossible [6, 2 3]. Ha X Congress herniologists (2013) some surgeons admitted that _ this operation is cause damage intercostal nerves and formation paralytic hernias [13].

Some surgeons use combined technique for giant POVH, essence which worth in use mesh material and own fabrics sick (parts muscle rectus abdominis or aponeurosis outdoor oblique muscle of the abdomen) [9]. Also, ect options implantation mesh prosthesis over - and sub-neurotic layer. Certainly, the data methods decide question formation reliable connective - woven scar, however camo execution operations becomes technically more difficult and traumatic that limits x wide application.

Poulose B. (2011) proposed installation alloprosthesis without openings abdominal cavities almost _ complete absence tension edge wounds [57]. However application this methods associated with high number local complications due to surface location allomaterial , as well as limited size hernial protrusions .

Belokonev V.I. (2004) was proposed method consisting in suturing _ residuals hernial bag, longitudinal dissection aponeurosis rectus abdominis muscles and stitching medial leaflets between coboy, after what to lateral leaflets fastened polypropylene mesh, and the median line is strengthened nodal seams [5]. wide applications this methodology not found.

Special attention on a throughout all history development herniology honored giant postoperative ventral hernia due to complexity execution hernioplasty. Rives J. in 1977 and then Stoppa RE in 1990 developed methodology tension-free hernioplasty with fixation allograft in the preperitoneal space that found your own reflection in works Zhukovsky V.I. (2011), Coda A. (2012) [15,40].

Main lack tension-free hernioplasty in any ee modifications is violation topographic - anatomical integrity front abdominal walls that _ leads to dysfunction of the muscle frame and, consequently, increases risk POVH recurrence. Resurrection linea alba strengthens abdominal muscles precca, shortening risk development hernia recurrence by 40 % [22].

Without a doubt tension-free hernioplasty is operation choice at larger POBG sizes and availability contraindications to tension analogy, however results experimental research demonstrated that activity fibroblasts, synthesis collagen in the postoperative rane and him more high organization, higher if available moderate tension in the area wounds [33].

Yamamoto H. (2014) presented research stating that defective abdominal wall after ee incomplete reconstruction calls defective mobility diaphragms that accordingly affects on a abdominal - caval pump, low intra-abdominal pressure leads to development obstructive and restrictive diseases lungs [62]. Besides this, full reconstruction front abdominal wall, produced with tension hernioplasty, for account intact function of the abdominal - caval pumps, helps prevention of PE, which is important in patients senior age group and with the presence factors risk [60]. This is in the next times confirms advantage tension x methods allohernioplasty for POVH, however how it was said previously in patients with giant sizes hernial protrusion execution tension hernioplasty leads to an increase intra-abdominal pressure limit movements diaphragm, paralysis intestines, development sharp cardio - pulmonary insufficiency [1].

Kyckerling F. (2019) suggested sew on allomaterial between two edges hernial gate, retreating by everything perimeter by 4–6 cm [52]. A number of authors used hernioplasty double allograft, however given approach not found wide application into force your technical complexity and high-cost operations [59].

Desire evaluate degree recovery abdominal walls prompted researchers on a thought necessary development criteria assessment of the function of the muscles of the anterior abdominal walls. Originally were done attempts holding needle electromyography [2]. Later Gram – Hanssen A. (2022) carried out an attempt assessment of muscle function using triplex dynamometer [45].

With a view estimates efficiency methodology hernioplasty some authors apply functional tests aimed at on a assessment of the function of the abdominal muscles precca. Was developed special scale (AWS–score scale), which evaluates quality restoration of the function of the rectus abdominis muscles [51]. Largest distribution received method proposed Pereira JA (2018) for sportswear medicine, consisting in the assessment flexion in the lumbar department spine in patients [56]. However, everything the above methods not received wide applications and not are objective criteria estimates quality completed hernioplasty.

Implementation laparoscopy in the surgical practice also affected herniology, which led to stormy development laparoscopic surgery POVH [7,39].

Implementation data methods significantly improved early results for a account significant abbreviations frequencies local complications due to the lack wide dermal cuts [7,36,39,41].

Laparoscopic hernioplasty includes two varieties method: IPOM and IPOM+ using hernioctaplers and through seams through everything layers to aponeurosis [132]. At the same time, in time execution plastics by type IPOM is carried out closing hernial gate synthetic allomaterial without suturing defect. With IPOM + plastic surgery, closing hernial gate with overlay additional seams through everything layers with liquidation defect front abdominal walls.

Important and controversial question is choice method fixations implant to the anterior abdominal wall with laparoscopic hernioplasty. By data Fiori F. (2019), overlay transabdominal seams leads to more significant painful syndrome during _ half a year after operations than _ application stapler [42]. Li B. (2020) and Muysoms F. (2013) in their research communicate about decrease expressiveness painful syndrome after use takernogo method [53]. However, a number of surgeons say that _ degree expressiveness painful syndrome directly depends from quantity-imposed seams [48]. Some _ publicationx met data on differences in expression painful syndrome depending on from used suture material, however results largex randomized research deny availability similar relationships [29]. Use fibrin glue reduces degree painful feelings, however use him as the only way fixations is unreliable [32].

By opinion rowa researchers, frequency development complications after laparoscopic hernioplasty in POVH is 2–26%, and relapses are 0–17% [7,31,39,41].

Yes, surgeons who are opponents applications laparoscopic hernioplasty, arguing your own opinion the fact that open hernioplasty technically less difficult and more reliable [3,18]. Others authors an obstacle to broad implementation laparoscopy to surgery POVH is considered necessity availability high-tech equipment, preparation operating doctor and difficulty holding operations for a account promotions pressure in the abdominal cavities when applied pneumoperitoneum in older people age group [24].

Before holding planned laparoscopic hernioplasty many surgeons spend preoperative training aimed at on a formation tolerance to increased pressure in the abdominal cavity: wearing elastic bandages or pneumatic bandages, intermittent overlay pneumoperitoneum, persistent decline masses bodies patients, quality cleansing intestine [41].

Due to the presence of negative aspects of laparoscopic hernia repair and its availability only in specialized hospitals, hernia repair techniques are widely used eoassistance, consisting of 2 stages: open, during which herniation is performed, adhesion if necessary and the imposition of retaining transabdominal sutures; laparoscopic, during which intra-abdominal fixation of the implant is performed [28,39,63]. Use these methods especially justified in cases availability expressed adhesive process in the abdominal cavity, in addition to this, this modification conjugated with smaller technical difficulties [16,54].

Summarizing the above, you can confidently assert that choice surgical treatment patients with POVH should base on a personalized approach taking into account available accompanying pathology, factors risk, surgical potential operating doctor and hospital.

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