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LAPAROSCOPIC REPAIR OF INGUINAL HERNIAS

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Abstract

The problem of surgical treatment of inguinal hernias over the last 25 years has gone through global changing. Tension free correction of defects of the anterior abdominal wall with using of synthetic prostheses are now the undisputed favorites in the treatment of inguinal hernias. After Lichtenstein operation, Laparoscopic hernia repair now occupies the second place in the structure of operations for inguinal hernias.

In 2011, laparoscopic hernioplasty TAPP were performed on 149 patient. The authors did not mention severe intra- or postoperative complications, as well as the conversion to open surgery at failure during laparoscopic surgery. From intraoperative complications they met more often bleeding (4). The greatest technical difficulties arose in damage of inferior epigastric vessels. In the postoperative period they met next complication: the most frequent groin hematoma (4), neuralgia (2) and paresthesias (5), pain in humeroscapular area (4). The laparoscopic techniques of hernia repair are effective, pathogenetically substantiated, provides a comfortable postoperative period and the possibility of early rehabilitation.

Key words: inguinal hernia, laparoscopic procedure, mesh, gerniostepler, complication

The problem is actual, because this pathology is widespread (3-7% of the population of the working people) with high percentage of recurrent hernia, especially if hernia was very big or ventral hernia. The inguinal hernia develops during life in 2% of male and 3% of females. The hernioplasty, of these hernia, is the most frequent surgery in the world. The level of emergency operation according to inguinal hernia is very high and the mortality is 6% and tendency to decrease. The traditional techniques of hernio repair is highly traumatizing to the tissue and results in high level of pain in postoperative period and loss work capacity. New approaches in surgery of hernia opened many ways of invasive laparoscopic techniques; these techniques exclude many of the limitation encountered in traditional surgeries. The methods of transabdominal preperitoneal (TAPP) hernioplasty proposed by Dr M.E. Arregui in 1991 and J.L. Dulucq in 1992, yielded good results. Nowadays the opinion of most surgeons indicate that the methods of preperitoneal prosthetics in treatment of hernia of the abdominal wall has advantages over other methods of hernioplasty, and can give us better incision and visualization of the anatomic structures of the inguinal channel. That is why it is possible to perform hernioplasty with minimum trauma and maximum effects. Based on experience and different publications, there is no single particular principle when treating inguinal hernias. Opinions of different authors about the advantages and disadvantages in modern open and closed hernioplasties are very diverse and require much different investigation to understand the problem.

Due to being highly widespread among working adults (3-7% of the population), their susceptibility to relapse, and their recurring nature increasing them sharply into giant hernias, ventral hernias are alarming and in need of urgent treatment. Out of all ventral hernias, 75% are inguinal and usually occur in higher prevalence in men (25%) than women (3%) throughout the working age. Hernioplasty is one of the most commonly performed surgical procedures in the world, where the number of emergency surgery for inguinal hernias remains high, and the mortality rate in this group is more than 6% and with no tendency to decrease.

Materials and methods: In 2011, laparoscopic hernioplasty TAPP were performed on 149 patient, of which, 19 of the patients were suffering from recurrent hernia, previously repaired by autoplasty(10), alloplasty by Liechtenstein (9) and (11) with bilateral hernias. The age range was from 25 to 50 years old. Three of the patients also simultaneously underwent laparoscopic cholecystectomy. All patients were admitted to the surgical department after standard investigations as outpatients. Preoperative diagnosis of inguinal hernia is based on the data of the

physical examination of the patients. Other instrumental methods of investigation (like ultrasound, CT scan, etc.) are used rarely; only in cases when doctors cannot detect the presence of hernia by visually examining the patient, however pain and discomfort in the inguinal region are present.

The laparoscopic methods are universal methods for treatment of inguinal hernias. That is why there is no need for verification of type of inguinal hernia in preoperative period.

A very important question is raised when selecting the mesh. Heavy mesh (80-100 g/m²) with small cells is subject to tissue deformation and as a result there is a possibility of losing up to 60% of the original area, which may lead to a hernia recurrence. Therefore, we use light polypropylene or composite mesh (Ultrapro, Parietex etc.) weighing 25-45 g/m² with a fairly large cells. These meshes have a much lower rate of deformity only by 10.4%, while maintaining elasticity in the tissues and without causing pain [1, 6]. To reduce surgical trauma and for cosmetic purposes it is possible to use 5 mm instruments. When using tools with larger diameter (10-12 mm) the trocar wound should be stitched.

One major complication of laparoscopic inguinal hernioplasty is the development of chronic postoperative pain syndrome. The International Association of the Study of Pain (IASP)) defines chronic postoperative pain as any pain that arises after surgery and continues for 3 or more months. One of the main developmental factors of chronic pain after laparoscopic hernioplasty is due to the damage of nerves while fixing the fibrosis mesh prosthesis.

This has contributed to the further improvement and the development of fundamentally new constructions of mesh. Thus, the company BARD has launched a new lightweight mesh-3D MAX LIGHT Mesh, having shape and curves that exactly match the anatomy of the inguinal region, providing a reliable closure of virtually any inguinal hernial defect, and a perfect fit on tissues reducing the number of fixing points from 7-9 on a flat mesh to 2-3. COVIDIEN company offers to use self-locking mesh «Parietex Progripp» and lightweight polyester mesh. Indicators for TAPP are; bilateral direct inguinal hernia in adult male patients (> 30 years), as well as recurrent (regardless of the number of previous operations) hernias after conventional open plastic surgeries and open inguinal hernioplasty. Open Liechtenstein hernioplasty and the endoscopic method of inguinal hernioplasty have proven to be the best options of surgical treatment of new-onset unilateral hernia. When correcting bilateral hernias, mobilization of the peritoneum is done on both sides, using 2 meshes and draining pre-peritoneal space in all cases.

In case of hernioplasty without mesh, the *Shouldice* technique is the way to go. If only for reasons of chronic pain, endoscopic hernioplasty is preferred then open mesh installation.

Contraindications to TAPP includes conditions related to the inability to imposing intense carboksiperitoneuma with massive adhesions in the abdominal cavity as a result of numerous operations on the abdominal organs complicated by the formation of intestinal fistula, large and giant ventral hernia, long-term stillness in Trendelenburg position in patients with severe concomitant diseases of the cardiovascular and pulmonary systems.

TAPP is also contraindicated in the presence of purulent inflammation in the anterior abdominal wall in the area of the intended surgical approach. Operation of choice in these patients is Liechtenstein hernioplasty.

Results and Discussion: Heavy intra- or postoperative complications, as well as the conversion to open surgery during laparoscopic access failure, any chronic inflammatory or ischemic complications were not noted. Only 21 patients experienced insignificant complications.

Intraoperative bleeding complications was the most prominent complication (4). The greatest technical difficulties arose in damage of the inferior epigastric vessels. 1 noted bleeding from the trocar wound, in 3 cases - when dissection of parietal peritoneum and the stapler. Average blood loss was 147.3 ml. Hemostasis is achieved in all cases laparoscopically - by stitching or coagulation. Damage to the inferior epigastric vessels in all cases occurred in patients with obesity I-III degree, which is associated with a pronounced pre-peritoneal lipoidosis. Immediately after opening the peritoneum traction occurs, which leads to local pre-peritoneal emphysema. This technique allows you to detachment the peritoneum from the underlying tissues, including the epigastric vessels. Also consider mandatory thorough hemostasis, even if bleeding wasn't severe. It is necessary due to the fact that after the end of surgery, desufflation of small damaged vessels may bleed again, leading to the development of post-surgical hematoma.

From complications associated with the use carboperitoneum, we noted the development of subcutaneous emphysema in 2 patients. Postoperatively, the most frequent was groin hematoma (4), neuralgia (2) and paresthesia (5), shoulder-scapular pain syndrome (4).

At first TAPP drainage of prosthetic bed was not made. All of these patients had pre-peritoneal hematoma, who were diagnosed with ultrasound and liquidated with conservative punctures. Number of punctures varied from 1 to 5. Re-intervention (relaparoscopy) affected one

patient after bilateral TAPP when the ultrasound indicated relapse. Subsequently, the operation ended by drainage of pre-peritoneal space for 12-24 hours.

Shoulder-scapular pain syndrome arose on the second day and had a transitory nature. This complication is not reflected in the works of various authors, but, in our opinion, should be considered in the postoperative period.

Violation of sensitivity, paresthesia, occurred more frequently in the anterior and lateral thigh, neuralgia - in the groin and scrotum. These concerns were temporary and did not restrict the activity of the patients. Pain (neurology) and paresthesia in most cases are the result of damage or compression of nerves branches extending in the operation area during mesh fixation by fastener. According to literature, the frequency of such sensations found in 5.12% of 3- (3, 7, 11, 21). Outside of the seminal vessels and fibers directly under the iliac-pubic tract are sexual and femoral-femoral branch of the pudendal nerve, femoral nerve and lateral femoral cutaneous nerve. Overlay fastener behind and below the iliac-pubic tract may result in damage to the above-described nerve trunks and branches, which is accompanied by neuralgia and paresthesia in respective zones during the postoperative period. Thus, in our study, the pain in groin and scrotum that occurred in 5 patients might be a consequence of damage of the genitofemoral nerve branches which innervate this zone. Long paresthesia on the inner thigh that occurred in one patient was connected, apparently, with damage to the femoral nerve. Given the anatomy, we had to fix the mesh graft lateral to the vessels of the spermatic cord imposing fastener just above the iliac-pubic tract and parallel to it, which virtually eliminates the risk of damage as nerve and iliac vessels and their branches. We also do not noted parasteziya when using self-locking mesh «Parietex Progripp».

Recurrence of the disease is the main criterion for the effectiveness of the operation. According to the literature the number of recurrence after laparoscopic hernia repair ranges from 0.6% to 3%. (13, 16, 18, 24). Recurrence of the disease in terms of up to 3 years not confirmed by us.

CONCLUSIONS: Surgeries using laparoscopic techniques are effective, pathogenically justified, provides a comfortable postoperative period and the possibility of early rehabilitation. Along with the well-known advantages, we believe it is important to note the specific advantages of laparoscopic hernia repair over traditional methods – the possibility to inspect the abdominal

cavity, one-stage bilateral inguinal hernias hernioplasty, and simultaneously closing of the graft from all weaknesses of the anterior abdominal wall.

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