

Results Of Minimally Invasive Treatment Of Complex Inguinal Hernias

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Article History	Abstract
Received: 26 th April, 2026 Accepted: 24 th May, 2026	Minimally invasive surgery has a wide range in modern surgery. The stages of endovisual intervention technology are based on diagnostic laparoscopy, which serves as the surgeon's savior in many difficult situations. If at the end of the 20th century all abdominal herniology was based on manual surgery, now visual or remote robotic surgery is preferred. Endovisual surgery is one of the safest methods for combined surgical pathology of the abdominal organs.
Keywords: Complex inguinal hernia, laparoscopic hernioplasty, endovideosurgery, lichtenstein.	

Introduction: Reading modern foreign literature on inguinal hernia defects, we encounter the term "Complex Inguinal Hernias," i.e., "complex" inguinal hernias. What does this new gradation measure provide, what approach includes the inclusion of a particular inguinal defect in the list of complex hernias. We can see different opinions in the new literature aimed at identifying them. [4,5,10]

Foreign articles also do not clarify this issue, only "Complex Inguinal Hernias" is a collective term, which includes all defects in the inguinal region that are not first-time unilateral oblique or straight hernias. [3,7,9]

Anterior abdominal wall hernias are one of the most common diseases and are a global health problem. Among the hernias of the anterior abdominal wall, inguinal hernias predominate. Hernia reduces the patient's quality of life and can lead to serious complications. In particular, the lifetime risk of developing inguinal hernia is 27-43% in men and 3-6% in women. Despite all achievements, 11% of all patients suffer from recurrence after primary inguinal hernia removal

and 10-12% from chronic pain. In particular, in a scientific study conducted by S.T.Sapiyeva et al (2024), modern data on the surgical treatment of non-reticular inguinal hernias are presented, the most common methods are highlighted, their advantages and disadvantages are studied. Anurag Singh et al. (2024) in their scientific work analyzed randomized controlled studies by comparing self-adhesive allomaterial with suture-fixed allomaterial during inguinal hernia surgery. [1,2,6,8]

The introduction of laparoscopic hernioplasty has led to some progress in herniology, a sharp decrease in the number of relapses. According to Protasov A.V. and Cooper N.J., after adequate laparoscopic hernioplasty, the frequency of repeated visits to the surgeon for inguinal hernias decreased from 10% to 2%. This indicates the high role and importance of laparoscopic hernioplasty in inguinal hernias. [2,10]

Material and methods of examination: Traditional treatment of complex inguinal hernias was carried out by laparoscopic hernioplasty, performed according to modern standards, on the recommendation of the European Society of Herniologists. Thus, in 2019-2021, we performed standard methods of hernioplasty on 110 patients with complex inguinal hernias hospitalized in the multidisciplinary clinic of the Tashkent Medical Academy.

For laparoscopic hernioplasty in patients with complex inguinal hernias, TAPP and traditional Lichtenstein methods were used.

Table 1

Methods of hernioplasty applied to patients (n=110)

Types of operations	Monola- teral	Bila- teral	Total
Liechtenstein	53 (48.2%)	7 (6.4%)	60 (54.6%)
TAPP	45 (40.9%)	5 (4.5%)	50 (45.4%)
Total	98(89.1%)	12(10.9%)	110 (100.0%)

TAPP was performed in 45 (40.9%) patients with unilateral and in 5 (4.5%) patients with bilateral hernias. The operation was performed under general anesthesia. Standard trocar insertion points were used in the implementation of TAPP.

In most cases, the inguinal hernia is located on the right side (56.4%). 39 (35.5%) patients had recurrent inguinal hernias. In 9 (4.4%) patients, during laparoscopy, the hernia product was easily drawn into the abdominal cavity due

to incomplete entry into the abdominal cavity, and in all cases, it was part of the greater omentum.

Patients of the control group with complex inguinal hernias (n=60) underwent hernioplasty according to the Lichtenstein method (54.5%). Of these, 53 (48.2%) patients underwent unilateral Lichtenstein surgery, and 7 (6.3%) patients underwent bilateral Lichtenstein surgery.

Clinical results and analyses: After the completion of the Lichtenstein operation, patients were active in the postoperative days. In the postoperative period, the following complications were observed: postoperative wound seroma - in 3 (2.7%) patients, neuralgic pain (usually with right-sided Lichtenstein) - in 3 (2.7%), inguinal hematoma - in 4 (3.6%), suppuration of the postoperative zone - in 3 (2.7%) patients.

Table 2

Types of postoperative complications in patients in the control group who underwent Lichtenstein (n=110)

Complications	Number of patients
Seroma	3 (2.7%)
Hematoma	4 (3.6%)
Neurological pain	3 (2.7%)
Recurrence	2 (1.9%)
Suppuration of postoperative site	3 (2.7%)
Total	15 (13.6%)

With the dissection of the parietal layer of the abdominal cavity in the zone of the inguinal hernia, local damage to the musculo-aponeurotic layer was noted in 3 (2.7%) cases, which required additional time to stop intermuscular bleeding. In 3 (2.7%) cases, the parietal layer of the peritoneum, together with the elements of the spermatic cord, was ruptured. When working with a hook at the isolation stage, randomly obtained local nerve fibers close to the parietal layer of the peritoneum also posed a danger, we recorded a similar phenomenon in 2 (1.8%) cases.

Table 2

Intraoperative lesion of anatomical structures in TAPP (n=110)

Injured organ	Before separating the peritoneum	After separation of peritoneum

Local musculo-aponeurotic layer	3 (2,7%)	-
Elements of the spermatic cord	2 (1,8%)	1 (0,9%)
Inferior epigastric artery	-	1 (0,9%)
Local nerve branch	2 (1,8%)	-
Branch of femoral vein	-	1 (0,9%)
Deserosis of small intestine	1 (0,9%)	-
Total	8 (7,3%)	3 (2,7%)
All	11 (10,0%)	

At the stage of external inguinal ring dissection, we identified damage to blood vessels in the inguinal region. Thus, damage to the spermatic cord vessels was observed in 3 (2.7%), damage to the inferior epigastric artery in 1 (1.8%), and damage to the femoral vein branch in 1 (0.9%) case. In 1 (0.9%) patient, deserosis of the hernia product was observed during repair of the small intestine, which was eliminated laparoscopically.

As a rule, patients were active in the following days after completing TAPP. On the 1st and 7th days after TAPP, a mandatory ultrasound examination of the inguinal region was performed. Ultrasound examination allowed for the detection of small fluids (seromas, hematomas) in the inguinal region in the early stages.

Table 4

Types of postoperative complications in patients who underwent TAPP
(n=110)

Complications	Number of patients
Hematoma	4 (3.6%)
Neurological pain	5 (4.6%)
Recurrence	1 (0.9%)
Total	10 (9.1%)

In the postoperative period, the following complications were observed: neurological pain - 5 (4.6%), inguinal hematoma - 4 (3.6%). In the presence of hematomas up to 1 cm thick, conservative absorptive therapy was prescribed. If

their thickness was greater, a puncture was performed. As a rule, one puncture was sufficient, rarely the need for the second.

Inflammation of the soft tissues in the puncture area was noted in 2 (1.8%) patients. In this case, antibiotic therapy was intensified, and the bandages were replaced with dimexide solution twice a day.

Discussion of the results. The results of various analyses of hernioplasty showed the high effectiveness of laparoscopic methods. However, it is necessary to study the shortcomings of the processes of performing minimally invasive hernioplasty after technical difficulties, intra- and surgical complications. The results obtained by us in the control group of patients after standard EVS showed the need for a scientific analysis of the stages of performing EVS.

Laparoscopic hernioplasty is a choice operation in the treatment of complex inguinal hernias, which has little trauma, but the frequency of intra- and postoperative complications indicates the need to improve EVS technology. [2,5,9]

The Lichtenstein method is traditionally acceptable in all patients due to the absence of contraindications for administration. This intervention was performed in 60 (54.6%) patients. During the treatment process, Lichtenstein, of course, showed his positive side. In the early and late postoperative period, no changes in the abdominal organs are observed. However, the probability of hernia recurrence remains higher than in TAPP.

Transabdominal preperitoneal hernioplasty was performed by us in 50 (45.4%) patients. The stages of diagnostic laparoscopy did not cause problems and were easily performed. The advantages of TAPP are directly related to this stage, i.e., the diagnostic value of the intervention.

In most cases (2.7%), accidental damage to the musculo-aponeurotic layer was noted during the dissection of the parietal layer of the peritoneum, and in 2.7% of cases, accidental damage to the elements of the spermatic cord was noted, which, in turn, led to the formation of a hematoma due to technical difficulties due to insufficient attention to identification. Long-term pain syndromes in the postoperative period were noted due to damage to local nerve fibers (1.8% of cases).

Summary:

1. The use of EVS for complex inguinal hernias, first of all, made it possible to significantly reduce the frequency of disease relapses. Thus, if in the group of patients receiving traditional treatment, according to our data and the literature,

relapses of the disease were recorded from 10 to 30%, then after EVJ this indicator allowed to decrease to 1.5%.

2. At the same time, a critical analysis of the results of EVJ and Lichtenstein in patients allows us to identify the following shortcomings. Complications during TAPP surgery were observed in 3 (2.7%) cases with damage to the spermatic cord vessels, 1 (0.9%) with damage to the inferior epigastric artery, and 1 (0.9%) with damage to the femoral vein branch. In 1 (0.9%) patient, deserosis of the hernia product was observed during repair of the small intestine. Complications observed after TAPP surgery: neurological pain in 5 (4.6%), inguinal hematoma in 4 (3.6%), recurrence of hernia in 1 (0.9%). At the same time, the following postoperative complications were observed in the postoperative period: wound seroma in the postoperative zone - in 3 (2.7%) patients, neuralgic pain - in 3 (2.7%) patients, inguinal hematoma - in 4 (3.6%) patients, and suppuration of the postoperative zone - in 3 (2.7%) patients.

3. In addition, the high frequency of such complications in EVJ, in our opinion, contributed to the development of the above complications in the postoperative period due to insufficient differentiation of patient indicators when choosing the type of operation in patients of the control group. Patients with complex hernias of type III B, IV A, IV B, and IV D according to L.M. Nyhus were examined for the possibility of EVH surgery. As an example, patients with type III B hernias are still recommended to undergo Lichtenstein surgery, but we analyzed the results of TAPP surgery in similar patients in the control group. The reason was to achieve a reduction in complications with EVJ. However, due to the fact that complications in such patients with complex hernias have not significantly decreased, we considered it necessary to create a new classification and select patients for the choice of surgical method based on indicators.

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