

The choice of treatment method for recurrent inguinal hernias after laparoscopic hernioplasty

The aim of the work: to determine the optimal method of reoperation for recurrent inguinal hernias after laparoscopic hernioplasty.

Materials and Methods. The research was conducted on the basis of the Regional Clinical Hospital (Odesa). During the period from 2012 to 2021, 36 patients with relapses after previous laparoscopic interventions for inguinal hernias were operated on in our clinic. Among these patients, there were 29 men and 7 women. Bilateral inguinal hernias were observed in 9 patients. Relapse occurred on one side in 6 patients, bilateral recurrence was in 3 patients. The results were evaluated according to the following criteria: the severity of postoperative pain, the number of postoperative complications, the length of stay in the hospital, recovery time after surgery and the patient's return to work.

Results and Discussion. The duration of repeated laparoscopic interventions was (82±10) min and significantly exceeded the duration of open operations ($p < 0.05$). The severity of pain in 12 patients after repeated operations that could be performed laparoscopically was significantly lower than in open interventions (VAS 4.8 vs 8.7, $p < 0.05$). Severe seromas in the area of the installed mesh were observed in 5 patients operated on by the laparoscopic method and in 4 patients operated on using the Liechtenstein method. Suppuration of the postoperative wound was observed in 3 patients, two of them underwent conversion. Patients started work after laparoscopic operations in 14–18 days, after open operations in 19–27 days ($p > 0.05$).

The choice of the method of repeated interventions for recurrent inguinal hernias depends on many factors. The main method of repeated interventions should be considered an open operation according to the Lichtenstein method. Under certain conditions, a second laparoscopic hernioplasty can be performed.

Key words: transabdominal preperitoneal patch plasty; totally extraperitoneal plasty; hernioplasty; laparoscopy; recurrent inguinal hernias,

Surgical operations for inguinal hernias in adults and children are the most common in general surgery. The recurrence rate after plastic surgery of inguinal hernias with own tissues is high and can reach up to 30 % [1]. The use of mesh implants, most often polypropylene meshes, reduced the recurrence rate from 1.5 to 3 % [1–2]. The currently most popular technique for inguinal hernia repair is the Lichtenstein technique, which allows achieving good results in most patients in 93–95 % of cases [2–3]. Despite a number of advantages (a relatively simple technique for performing the operation, it can be performed under local anesthesia, a low percentage of relapses, a short stay in the hospital), the Liechtenstein plastic technique has disadvantages. During the Liechtenstein operation, suppuration of the wound can be observed in 4.5–7 % of cases, seroma often occurs in 15–21.8 % of cases [1–3]. Nerve damage can occur, which leads to the development of a long-term pain syndrome in 15 % of cases. The polypropylene mesh intimately grows into the spermatic cord, which can lead to ischemic orchitis, which is observed in 3–7 % of cases. Sufficiently pronounced pain syndrome forces the operated patients to administer painkillers for 3–5 days [2–4].

After the introduction of laparoscopic approaches into surgery, laparoscopic techniques for the treatment of inguinal hernias have been developed. The in-

tra-abdominal technique for the treatment of inguinal hernias – transabdominal preperitoneal patch plasty (TAPP) is based on the isolation of the hernia defect from the abdominal cavity [5]. The peritoneum above the hernial defect is excised and the elements of the spermatic cord and the hernial sac are isolated, after which the hernial defect is closed with a polypropylene mesh measuring 10–12 cm, which is fixed to the periosteum of the pubis and the anterior abdominal wall.

The second method of laparoscopic treatment of inguinal hernias is totally extraperitoneal plasty (TEP). The principle of this method consists in the peritoneal isolation of the hernial defect and covering it with a polypropylene mesh, while the surgeon does not penetrate into the abdominal cavity, which avoids damage to muscle structures and other nearby organs [5]. Laparoscopic methods of treatment of inguinal hernias turned out to be much less traumatic in practice than Liechtenstein operations [1, 2, 5]. After laparoscopic surgery, patients have a less pronounced pain syndrome, a lower frequency of postoperative complications, patients stay in the hospital for only 2–3 days and start working within two weeks.

At the same time, the number of recurrences after laparoscopic hernioplasty is higher than after the Liechtenstein operation and can reach 10–18 % [3]. According to recent meta-analyses, 13 % of patients need reoperation for recurrent inguinal hernia [1–3].

The problem of choosing the optimal method for recurrent inguinal hernia after laparoscopic surgery is still not resolved.

The aim of the work: to determine the optimal method of reoperation for recurrent inguinal hernias after laparoscopic hernioplasty.

Materials and Methods. During the period from 2012 to 2021, 36 patients with relapses after previous laparoscopic interventions for inguinal hernias were operated on in our clinic. Among these patients, there were 29 men and 7 women. Bilateral inguinal hernias were observed in 9 patients. Relapse occurred on one side in 6 patients, bilateral recurrence was in 3 patients. The age of the patients ranged from 38 to 73 years. The mean age was (58.8 ± 7.5) years, i.e., most often hernia recurrence was observed in the active working population. Problems with urination before the first operation had 12 patients (41.38 %). These patients had a clinic of chronic prostatitis, cystitis, 2 patients underwent prostatectomy for prostate cancer. Hernia recurrence in the vast majority of patients occurred in the first 2–3 years after surgery. In 4 patients, recurrence was diagnosed 3–6 months after surgery and was due to technical errors in laparoscopic hernioplasty. 7 patients had a relapse 5–8 years after the operation. In 2 patients, the hernia recurred 10 years after the first operation. 12 (41.38 %) patients were operated on in our clinic, the remaining 17 patients (58.62 %) were operated on in other clinics.

Before surgery, all patients underwent a complete clinical and laboratory examination. Computed tomography, which confirmed hernia recurrence, was performed in 16 out of 29 patients. Ultrasound examination of the abdominal cavity was performed in all patients.

The choice of the method of reoperation was determined primarily by the position of the patient and the size of the inguinal hernia. In 19 patients, reoperation was performed using the open method using the Lichtenstein method. Technical difficulties were in 6 patients who had large recurrent inguinal-scrotal hernias. Isolation of the hernial sac and hernial orifice was accompanied in patients with tissue bleeding and difficulty in separating the hernial sac from the elements of the spermatic cord. After isolation of the hernial sac, excision of the latter was performed in only 8 patients. In other patients, the hernial sac was immersed into the abdominal cavity and the transverse fascia was sutured over it. The hernial defect was covered with a polypropylene mesh measuring 10–12 cm. As a rule, we used lightweight meshes. The edges of the mesh were fixed with separate sutures to the periosteum of the pubic bone and the remains of

the pupart ligament. The distal section of the mesh was spread out to pass the elements of the spermatic cord, and then the edges of the mesh were sewn together and left an adequate hole for the spermatic cord. The upper edge of the mesh was passed under the aponeurosis of the external oblique muscle of the abdomen and securely fixed. At the end of the operation, a separated flap of the external oblique muscle of the abdomen was fixed over the superimposed mesh. Patients were discharged from the hospital most often 5–6 days after the initial wound healing. In 17 patients, reoperation was performed using laparoscopic technique. A pneumoperitoneum was applied in the umbilical region and the first 10 mm trocar was inserted. It should be noted that three patients had an expansion of the umbilical ring after a previous laparoscopic operation.

After the introduction of the first trocar and examination of the abdominal cavity, two 5 mm trocars were inserted in the right and left iliac regions. Of the 17 patients who underwent relaparoscopy, 14 patients underwent TAPP (transabdominal hernioplasty) surgery, 3 patients were operated on by TEP (total preperitoneal hernioplasty).

Results and Discussion. Patients who underwent TAPP had an adhesive process in the area of operation. Usually, an omentum was soldered to this zone, in 3 patients the sigmoid colon was soldered, in 2 patients – loops of the small intestine.

Patients who underwent TEP did not have a pronounced adhesive process in the abdominal cavity. After isolation of the hernial defect from adhesions above it, the peritoneum was dissected. It should be noted the technical difficulties in separating the peritoneum in the area of the hernial defect due to intimate fusion with the previously applied mesh implant. The hernial sac was isolated and separated from the elements of the spermatic cord and partly from the mesh.

Laparoscopic revision revealed that in the vast majority of patients, relapse occurred due to poor fixation of the mesh implant, its displacement and twisting. In 5 patients, the reason for recurrence was the use of a small mesh implant. When isolating a hernial defect due to adhesions and technical difficulties, the arteria epigastrica inferior was injured in one patient. Produced reliable coagulation of the artery. In most patients, it was not possible to isolate and excise a previously installed mesh implant. For these patients, a new mesh was placed on top of the previously placed mesh.

In 5 patients, the isolation of the hernial sac was technically very difficult. They made a conversion. The mesh implant was placed through the tissue in-

cision with an anterior approach. During repeated laparoscopic operations, a lightweight mesh implant measuring 12 by 15 cm was installed. It was very important to ensure good fixation of the mesh implant. It was impossible to fix the mesh with tackers along the lower edge of the mesh in the zone of passage of large vessels, so the mesh was fixed to the Poupart ligament with separate sutures, which prevented mesh displacement.

The duration of repeated laparoscopic interventions was (82±10) min and significantly exceeded the duration of open operations ($p < 0.05$).

The severity of pain in 12 patients after repeated operations that could be performed laparoscopically was significantly lower than in open interventions (VAS 4.8 vs 8.7, $p < 0.05$).

In the postoperative period, 3 patients who underwent open Lichtenstein interventions and 2 patients who underwent conversion had hematomas in the area of the postoperative wound. Repeated surgical intervention for hematoma was performed in only one case.

Drainage into the subcutaneous space was installed only in one case due to severe tissue bleeding. During the operation, patients were given a prophylactic dose of a broad-spectrum antibiotic (most often 2–3 generation cephalosporins). The duration of open operations averaged (58±7) minutes. In all patients, the severity of pain syndrome was determined according to the VAS scale from 1 to 10. In case of severe pain syndrome, patients were prescribed narcotic painkillers.

Severe seromas in the area of the installed mesh were observed in 5 patients operated on by the laparoscopic method and in 4 patients operated on using the Lichtenstein method.

Suppuration of the postoperative wound was observed in 3 patients, two of them underwent conversion. Patients started work after laparoscopic operations in 14–18 days, after open operations in 19–27 days ($p > 0.05$).

When studying the long-term results of operations in the period from 2 to 5 years after the intervention, a repeated relapse was detected in 1 patient operated laparoscopically and in 3 patients after open operations ($p > 0.05$).

Chronic pain syndrome was observed in 2 patients: in one patient after the Lichtenstein operation and in one patient after conversion.

It should be noted that all 7 women who were operated on for recurrent inguinal hernia in any case did not have relapses and did not develop chronic pain syndrome.

The problem of choosing the method of repeated operations after recurrence of inguinal hernias

remains quite relevant. As noted by most foreign authors, there is still no consensus on the choice of the optimal method for the treatment of recurrent hernias [6, 23]. Published materials [5, 3, 6, 15] compare the results of repeated laparoscopic and open operations, but no clear conclusions have been drawn. Laparoscopic methods require great skill of surgeons, are longer in time, but less traumatic. Open surgeries do not differ significantly from laparoscopic ones, however, they are accompanied by a large number of wound suppurations, hematomas, damage to the spermatic cord, and ischemic orchitis [5, 6, 12]. The frequency of repeated recurrences after laparoscopic and open reoperations is approximately the same [2].

It should be noted that the published meta-analyses provide data on reoperations mainly in patients with relapses who were operated on by the open method. There are practically no actual results of repeated operations in patients who underwent laparoscopic hernioplasty in the literature.

We analyzed the results of a large group of patients, consisting of 29 patients who had relapses after previous laparoscopic interventions. In the vast majority of patients, the primary operation was performed according to the TAPP method; only in 3 cases, hernioplasty was performed using the TEP method.

19 patients expressed their wish that the reoperation be performed in an open way. They underwent the Lichtenstein operation without serious complications. Long-term recurrence was 10.5 % (in 2 out of 19 patients). Serious complications were not observed. Wound suppuration, hematomas, seromas were noted in 5 out of 19 patients.

19 patients expressed their wish that the reoperation be performed in an open way. They underwent the Lichtenstein operation without serious complications. Long-term recurrence was 10.5 % (in 2 out of 19 patients). Serious complications were not observed. Suppuration of the wound, hematomas, seromas were noted in 5 patients out of 19. The vast majority of patients were satisfied with the results of repeated open operations.

Laparoscopic reoperations were performed in 17 patients. It should be noted the technical difficulties of repeated laparoscopic interventions. In 5 out of 17 patients, due to difficulties in isolating the hernial sac, a conversion was performed with the installation of a Lichtenstein mesh implant. In one case, the epigastric inferior artery was damaged. The duration of laparoscopic interventions was significantly higher than in open surgeries (82±10) min vs (58±7) min, $p < 0.05$). At the same time, in cases where repeated laparoscopic interventions were successful, the results were significantly better than in the group of pa-

tients with open Lichtenstein interventions. Patients noted less pronounced pain after surgery (VAS 4.8 vs 8.7 $p < 0.05$).

The length of hospital stay was also lower (3.2 ± 1.5 days vs 6.4 ± 1.8), $p < 0.05$). After laparoscopic interventions, patients quickly returned to active work, which is important both from an economic and social point of view.

It is important to note that after successful repeated laparoscopic interventions, the development of chronic pain syndrome is less common, since there is less likelihood of damage to the ileo-inguinalis and ileohypogastric nerves, as indicated by other authors [23, 28].

Thus, our small experience of reoperations in patients with inguinal hernias who underwent laparoscopic hernioplasty showed that Lichtenstein's open surgery methods and repeated laparoscopic inter-

ventions can be used in reoperations. The choice of method should be determined both by the wishes of the patients and the experience of the surgeons. If the surgeon does not have much experience in repeated laparoscopic interventions, then it is better to perform an open operation according to the Lichtenstein method. Open surgery is preferred for large recurrent inguinal-scrotal hernias.

With sufficient experience, surgeons can successfully perform repeated laparoscopic operations.

Conclusions. The choice of the method of repeated interventions for recurrent inguinal hernias depends on many factors. The main method of repeated interventions should be considered an open operation according to the Lichtenstein method. Under certain conditions, a second laparoscopic hernioplasty can be performed.

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ВИБІР МЕТОДУ ЛІКУВАННЯ РЕЦИДИВНИХ ПАХОВИХ ГРИЖ ПІСЛЯ ЛАПАРОСКОПІЧНИХ ГЕРНІОПЛАСТИК

Мета роботи: визначення оптимального способу повторної операції при рецидивних пахових грижах після лапароскопічної герніопластики.

Матеріали і методи. Дослідження проводили на базі Одеської обласної клінічної лікарні. Впродовж 2012–2021 рр. у нашій клініці прооперовано 36 пацієнтів з рецидивами після попередніх лапароскопічних втручань з приводу пахових гриж. Серед них було 29 чоловіків і 7 жінок. У 9 пацієнтів спостерігали двосторонні пахові грижі. Односторонній рецидив спостерігали в 6 хворих, двосторонній – у 3 пацієнтів. Результати оцінювали за такими критеріями: вираженість післяопераційного болю, кількість післяопераційних ускладнень, тривалість перебування в стаціонарі, час відновлення після операції та повернення пацієнта до роботи.

Результати досліджень та їх обговорення. Тривалість повторних лапароскопічних втручань становила (82±10) хв і достовірно перевищувала тривалість відкритих операцій ($p < 0,05$). Вираженість болю у 12 пацієнтів після повторних операцій, які можна було виконати лапароскопічно, була достовірно нижчою, ніж при відкритих втручаннях (ВАШ 4,8 проти 8,7, ($p < 0,05$)). Виражені сероми в ділянці встановленої сітки спостерігали в 5 хворих, оперованих лапароскопічним методом, і у 4 пацієнтів, оперованих за Ліхтенштейном. Нагноєння післяопераційної рани спостерігали у 3 хворих, у двох з них виконана конверсія. Пацієнти після лапароскопічних операцій приступали до роботи на 14–18 добу, після відкритих – на 19–27 добу ($p > 0,05$).

Вибір методу повторних втручань при рецидивних пахових грижах залежить від багатьох факторів. Основним методом повторних втручань слід вважати відкриту операцію за методом Ліхтенштейна. За певних умов можливе проведення повторної лапароскопічної герніопластики.

Ключові слова: трансабдомінальна передочеревинна пластика; тотальна екстраперитонеальна пластика; герніопластика; лапароскопія; рецидивні пахові грижі.