OUR EXPERIENCE RETROPERITONEOSCOPIC EXCISION OF SIMPLE KIDNEY CYSTS: ADVANTAGES AND DISADVANTAGES

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Conflict of interest
The authors declare that they have no conflicts of interest

Abstract

Objective. *Assess advantages and disadvantages of retroperitoneoscopic access for the resection of renal cysts in clinical practice.*

Material and methods. *For the period from 01/09/2020 to 30/11/2021, in our center we performed 25 retroperitoneal endoscopic resections of renal cysts. Access was made through Lesgaft-Grunfield triangle. All patients underwent standard clinical evaluation for renal cysts.*

Results. *Retroperitoneal access was performed for all patients by standard technique. All surgeries were finished without conversion to open surgery. Mean duration of surgery was 25,45 ± 2,55 min. Mean intraoperative blood loss was 20,4 ± 0,6 ml. Intra – and postoperative complications, that required extra interventions were not encountered. Mean hospital – in stay was 4,6 ± 0,4 days and patients soon after discharge returned to their daily activities. All patients were under follow-up to 12 months.*

Conclusion. *Retroperitoneal endoscopic access is a good alternative for laparoscopic access for surgical treatment of renal cysts, with less trauma and with no invasion into peritoneal cavity. Time of recovery is the same as with laparoscopy. This technique is also carries good cosmetic effect. One of main advantages is that in this access it is possible to hold high CO_2 pressure, that is particularly in patients with ischemic heart disease is undesirable to hold high intraabdominal pressure.*

Keywords:
retroperitoneal endoscopic access, resection, renal cyst

Қарапайым бүйрек кистасын ретроперитонеоскопиялық алып тастаудағы тәжірибеміз: артықшылықтары мен кемшіліктері

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Аңдатпа

Мақсаты. *Клиникалық тәжірибеде бүйрек кисталарын хирургиялық емдеу үшін перкутанды-ретроперитональды әдістің артықшылықтарын мен кемшіліктерін бағалау.*

Материал және әдістер. *09.01.2020-30.11.2021ж.ж. аралығында біздің орталықта 25 науқасқа бүйрек кисталарының ретроперитонеальді эндоскопиялық резекциясы жасалды. Хирургиялық әдіс Лесгафт-Грунфельд үшбұрышы арқылы жасалды. Операция алдында барлық науқастар бүйрек кистасы бойынша жасалатын стандартты тексеруден өтті.*

Нәтижелер. *Барлық пациенттерге стандартты техникаға сәйкес ретроперитонеоскопиялық жол жасалды. Барлық операциялар эндоскопиялық әдіспен ашық операцияға ауыстырылмай аяқталды. Операцияның орташа ұзақтығы 25,45±2,55 минутты құрады. Операция кезіндегі қан кету орташа есеппен 20,4±0,6 мл құрады. Қосымша шаралар қажет ететін операциядан кейін ерте және кейінгі асқынулар болған жоқ. Ауруханада болу уақыты орташа есеппен 4 төсек-күнді құрады, ал науқастар қысқа мерзімде еңбек қызметін бастады. Барлық науқастар отадан кейін 12 ай бойы бақылауда болды.*

Қорытынды. *Ретроперитонеальді эндоскопиялық әдіс бүйрек кисталарын хирургиялық емдеуде лапароскопиялық әдіске жақсы альтернатива болып табылады, бірақ жарақаты азырақ, хирургиялық жолмен құрсақ қуысына енбейді. Пациенттер үшін қалпына келу кезеңі лапароскопиялық әдіске сәйкес уақыт алады.Сонымен қатар, жоғарыда көрсетілген әдіс жақсы косметикалық әсерге ие. Тағы бір маңызды жағы - ретроперитонеоскопия көмегімен көмірқышқыл газының жоғары қысымын қамтамасыз етуге болады, атап айтқанда, жүректің ишемиялық ауруы бар науқастарда іш қуысында қысым қажет емес.*

Мүдделер қақтығысы
Авторлар мүдделер қақтығысының жоқтығын мәлімдейді

Түйін сөздер:
ретроперитонеальді эндоскопиялық әдіс, резекция, бүйрек кистасы

Наш опыт ретроперитонеоскопического иссечения простых кист почек: преимущества и недостатки

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Аннотация

Цель. *Оценить преимущества и недостатки ретроперитонеоскопического доступа для иссечения простых кист почек в клинической практике.*

Материал и методы. *За период с 01/09/2020 по 30/11/2021, на базе нашего центра было выполнено ретроперитонеальное эндоскопическое резекция кист почек 25-м пациентам. Доступ выполнялся через треугольник Лесгафта-Грюнфельда. Перед операцией все пациенты проходили стандартное обследование по поводу кисты почки.*

Результаты. *Всем пациентам был выполнен ретроперитонеоскопический доступ по стандартной методике. Все операции были завершены эндоскопически без конверсии на открытую операцию. Средняя продолжительность оперативного вмешательства составила 25,45 ± 2,55 минуты. Интраоперационная кровопотеря составила в среднем 20,4 ± 0,6 мл. Интра-ипослеоперационных осложнений, требующих дополнительных вмешательств, не было. Время проведенной в стационаре в среднем составило 4 койко-дня и пациенты приступали к своей трудовой деятельности в скором времени. Все больные находились под наблюдением в течение 12 месяцев после вмешательства.*

Выводы. *Ретроперитонеальный эндоскопический доступ является хорошей альтернативой лапароскопическому доступу при хирургическом лечении кист почки, при этом являясь также малотравматичным, без инвазии в брюшную полость хирургическим доступом. Период восстановления пациентов аналогичен лапароскопическому доступу.*

Также вышеуказанный доступ обладает хорошим косметическим эффектом. Еще одним немаловажным фактом, является то, что при ретроперитонеоскопии возможно подача высокого давления углекислого газа, в частности, у пациентов с ишемической болезнью сердца, у которых нежелательно давление в брюшной полости.

Ключевые слова:
ретроперитонеальный эндоскопический доступ, резекция, кисты почек

Relevance

A kidney cyst is a congenital or acquired, in which, in particular, the organ forms a rounded dense formation with liquid contents. As a rule, the cyst is located on the surface of the kidney, closer to the atrium of the pole, has a round or oval shape [1].

Indications for surgical treatment of a kidney cyst are: back pain, infection (infected cyst), arterial hypertension (with compression of the kidney cyst), compression of the pelvicalyceal system and the risk of malignancy [2].

Currently, in the conditions of modern medicine, kidney cysts are traditionally removed laparoscopically. There are also varieties of LESS (Laparo-endoscopic single-site surgery) [3], in which one common port is installed, but in general the procedure is similar to traditional laparoscopy.

Despite the fact that cysts in most cases are benign in nature, there are those that require increased attention. For this purpose, the Bosniak classification is used (Figure 1).

Category I. Simple thin-walled, usually benign in nature, which do not require treatment in the absence of symptoms.

Category II. In contrast to category 1 cysts, in this case there is a thickening of the walls and the appearance of single partitions, with calcification of the partitions.

Category IIF. Benign cysts that contain more thin septa. The walls and septa may be thickened, often containing calcium deposits in the form of nodules. Almost never accumulate contrast, as they do not contain a tissue component. The sizes of these cysts can be greater than or equal to 3 cm and require dynamic monitoring. As a rule, they do not require surgical treatment.

Category III. The group is more uncertain and tends to malignancy (acquires malignant qualities). Radiological features include indistinct contour, thickened septa, and inhomogeneous areas of calcium deposition. In the absence of kidney injury or infectious diseases, as a rule, surgical treatment is required.

Category IV. The formations have a large liquid component, an uneven and even bumpy contour, and, what is especially important, in some places they accumulate a contrast agent due to the tissue component. This process indirectly indicates malignancy, always requires surgical treatment.

Material and methods

For the period from 01/09/2020 to 30/11/2021, all patients underwent retroperitoneal endoscopic resection of kidney cysts in 25 patients. In the course of access, I feel in the forest triangle of Greenfelt. There were 6 men (28%), women - 19 (72%). The mean age of the patients was 47 ± 0.4 years (range 21–80 years). The duration of the operation is on average 25.45 ± 2.55 (range 15-40 minutes). Left kidney (15 people, 68.20% of patients; right kidney 7 people, 31.80%).

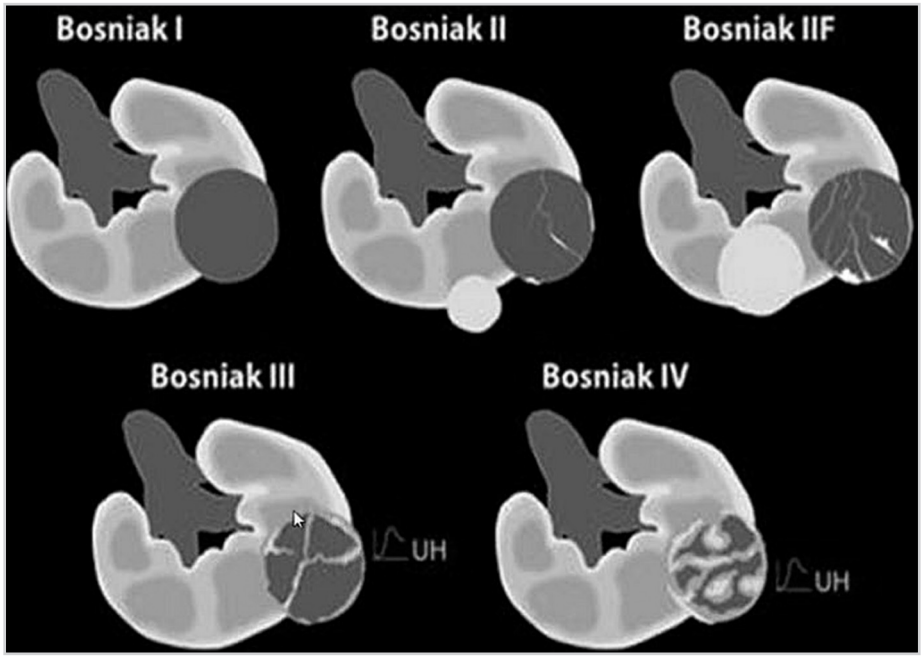


Figure 1.
Bosniak classification of renal cysts
(Data from - https://shopdon.ru/blog/ultrazvukovaya-diagnostika-kist-pochek-po-bosniak-lektsiya-dlya-vrachey/)

Before surgery, all patients underwent renal ultrasonography, intravenous urography, and computed tomography was used when there was doubt about the benign nature of the cyst. The mean cyst size was 8 ± 2 cm (range 5 to 10 cm). Cysts were located in the lower segment in 10 (45%) patients, in the middle segment in 5 (23%) patients, and in the upper segment in 7 (32%) cases.

Operation technique

The operation is performed under general endotracheal anesthesia. The patient is placed in the traditional position on the side, opposite to the area of operation, using a roller, with the achievement of maximum extension. In the projection of the Lestgaft-Grunfeld triangle ("muscle-free" zone), bounded from above - by the lower edge of the posterior inferior serratus muscle, medially - by the outer edge of the muscle that straightens the body, laterally and from below - by the external and internal oblique muscles of the abdomen, a skin incision was made, then the introduction of a 10 mm trocar , then after a preliminary retropneumopararen in a volume of 1.5 liters of CO_2.

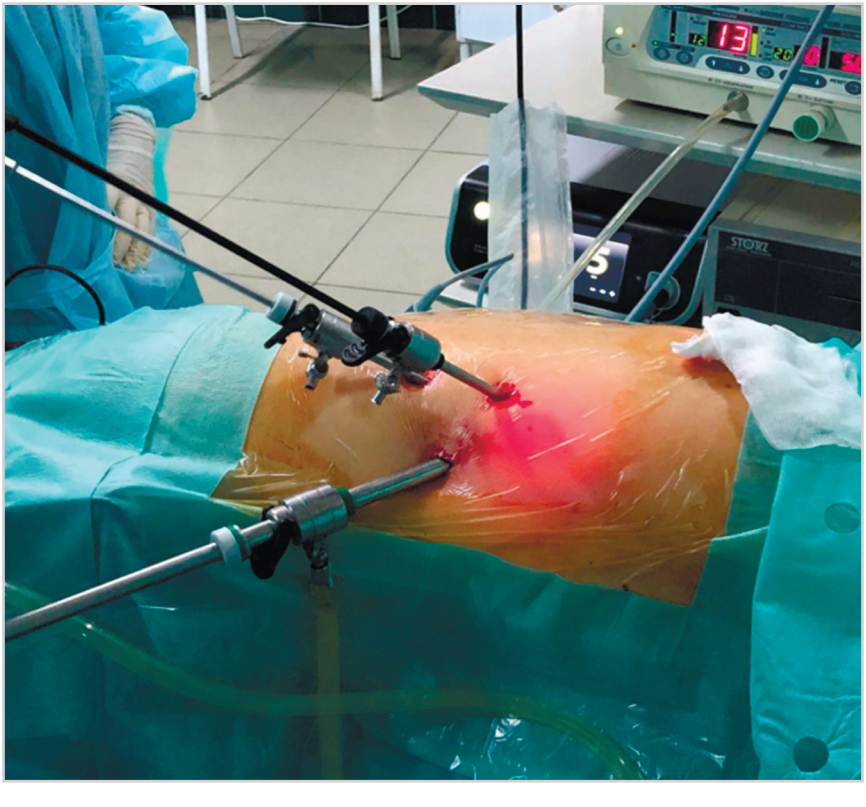
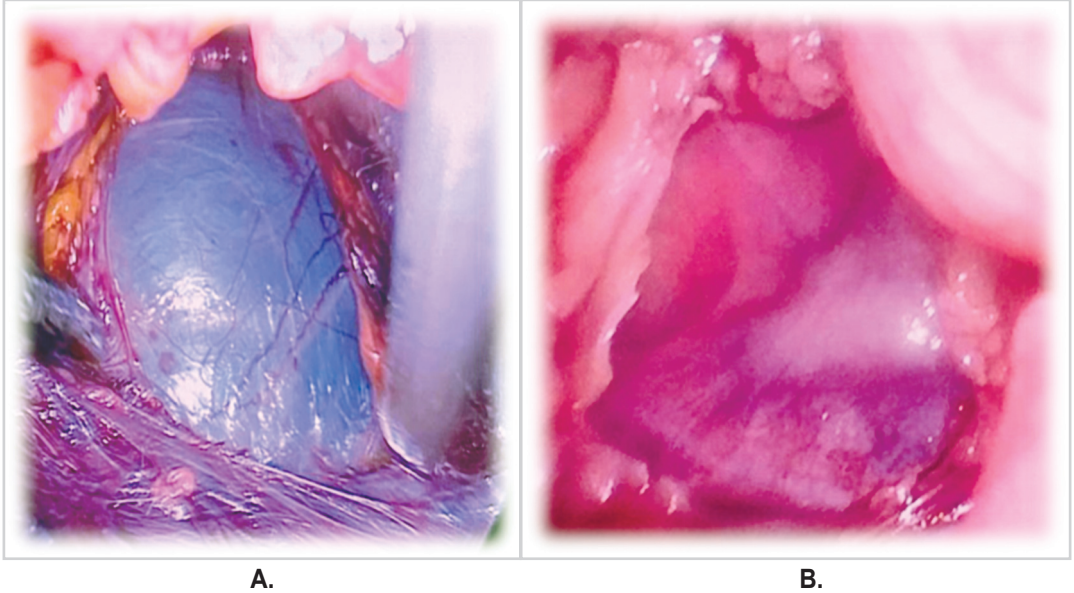


Figure 2.
Position of the patient and trocars during retroperitoneoscopic excision of a kidney cyst

Operation technique

The operation is performed under general endotracheal anesthesia. The patient is placed in the traditional position on the side, opposite to the area of operation, using a roller, with the achievement of maximum extension. In the projection of the Lestgaft-Grunfeld triangle ("muscle-free" zone), bounded from above - by the lower edge of the posterior inferior serratus muscle, medially - by the outer edge of the muscle that straightens the body, laterally and from below - by the external and internal oblique muscles of the abdomen, a skin incision was made, then the introduction of a 10 mm trocar, then after a preliminary retropneumopararen in a volume of 1.5 liters of CO_2. Regardless of the nature of the intervention performed, the first step is to make a wide horizontal incision in Gerota's perirenal fascia to visually control the lumbar muscles, which are one of the main anatomical landmarks in the retroperitoneal space. Carefully isolating the tissues, the localization of the cyst is determined (Figure 3A). The latter, after maximum isolation from adipose tissue, is excised within the kidney parenchyma, aspiration of the cyst contents, coagulation of bleeding edges (Figure 3B). The operation is completed with careful hemostasis and drainage.



A. **B.**

Figure 3. Cystic formation of the left kidney (A. before excision of the cyst walls; B. after resection of the cyst wall membrane)

The effectiveness of RP excision of a kidney cyst was assessed by the following parameters

- the duration of the operation;
- frequency, nature and severity of intra- and postoperative complications;
- Length of stay in the hospital after surgery;
- the timing of the removal of the drainage installed in the perirenal space;
- the need and volume of blood transfusion;
- presence and severity of pain syndrome (need for pain medications in the postoperative period);
- frequency of conversions to open operation;
- frequency of additional interventions.

Results

The average duration of surgery was 15.7 ± 40.3 minutes (25 to 40 minutes). Intraoperative blood loss averaged 20.4 ± 0.6 ml (range 0 to 60 ml). There were no intra- and postoperative complications requiring additional interventions. Time spent in the hospital averaged 4 days (range 3-6 days) and patients started their work activities within 4.6 ± 0.4 days.

All patients were followed up for 12 months after the intervention. 20 (90.9%) patients completely got rid of pain in the lumbar region, in other cases, its intensity significantly decreased and patients stopped taking painkillers. After elimination of the cyst, no recurrence of urinary tract infection was observed in any patient for 6 months.

Discussion

Retroperitonescopic cyst excision is practiced worldwide [4]. Laparoscopic renal cyst excision is also an effective treatment for symptomatic renal cysts. Its minimal invasiveness and high success rate set it apart from other treatments [5]. Another most effective method is LESS, a new method of minimally invasive urological surgery that is rapidly gaining popularity. The result of LESS shows that it can be used safely and effectively in many urological procedures, including cyst decortication, which can be performed bilaterally in a single session [6].

Percutaneous puncture of simple renal cysts is a minimally invasive and safe procedure for the treatment of renal cysts. Percutaneous instillation of sclerosing agents into simple renal cysts is associated with a success rate of 75–97%, with a complication rate of 1.3–20% [7].

The retroperitoneal approach is also the method of choice and has its advantages: it reduces the risk of hypercapnia, hypothermia, postoperative intestinal obstruction, unintentional damage to the abdominal organs and hernia formation compared to the transperitoneal approach [8]. To date, retroperitoneoscopy is our method of choice for the treatment of symptomatic renal cysts.

After complete excision, adipose tissue was introduced into the bed. Insertion of adipose tissue

into the cyst base and fixation to the cyst wall will prevent adhesion of the cavity wall to surrounding tissues or coaptation of the residual cyst wall, acting as a wick, facilitating drainage and absorption of the fluid secreted by the remaining cyst wall and cyst base, thus reducing the risk of cyst recurrence.

Conclusion

In our center, both laparoscopic and retroperitoneoscopic techniques for excision of kidney cysts are performed. Both methods have similar indicators of operation time, blood loss and high efficiency, however, we noted an important advantage of retroperitoneoscopic access - non-invasiveness in the abdominal cavity. The risk of postoperative intestinal paresis and the risk of damage to the abdominal organs is reduced to a minimum. In our practice, we also use adipose tissue to pack the residual cavity of the cyst. All patients had no signs of relapse one year after observation. In our center, both laparoscopic and retroperitoneoscopic techniques for excision of kidney cysts are performed. Both methods have similar indicators of operation time, blood loss and high efficiency, however, we noted an important advantage of retroperitoneoscopic access - non-invasiveness in the abdominal cavity. The risk of postoperative intestinal paresis and the risk of damage to the abdominal organs is reduced to a minimum. In our practice, we also use adipose tissue to pack the residual cavity of the cyst. All patients had no signs of relapse one year after observation.

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