



## CHOICE OF SURGICAL METHODS IN PATIENTS WITH URINARY STONE DISEASE

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Received 2<sup>nd</sup> May 2023,  
Accepted 3<sup>rd</sup> Jun 2023,  
Online 10<sup>th</sup> Jul 2023

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**ABSTRACT:** *Evaluation of the effectiveness of various methods of treating patients with urolithiasis, and recommending the best methods of minimally invasive surgical interventions. Patients and methods. To systematize the main clinical material, all patients, depending on the location of the calculus, were divided into two groups: the first group - patients with ureteral stones; the second group - with kidney stones. Depending on the method of performing surgical intervention, both groups were divided into 4 options, in options II, III, IV, minimally invasive technologies were used as monotherapy, as well as their combinations. The comparison group consisted of patients who underwent traditional open surgery. The results of treatment were assessed clinically in the near and long term. Treatment was considered ineffective in the presence of residual stones not removed during this hospitalization.*

**Keywords:** *Urolithiasis, distant shock wave lithotripsy, contact ureterolithotripsy, percutaneous nephrolithotripsy, nephrolithiasis.*

### Introduction

The terms of wound drainage and stenting of the urinary tract, healing of urinary fistulas, and the length of stay in the hospital were compared. Long-term results of treatment were assessed by clinical indicators, the number of relapses and late postoperative complications.

The duration of the postoperative period after minimally invasive interventions is significantly shorter than after open ones. The performance of endoscopic operations in terms of time approaches the traditional ones, but they are favorably distinguished by the absence of blood loss, a favorable course of the postoperative period, and minimal rehabilitation periods. There is practically no need for repeated manipulations. Both in endoscopic operations and in ESWL, blood loss is estimated as zero. Significant differences were noted in the time of anesthesia and surgery when removing a stone from

open access and PCNL, URLT. The duration of open surgeries was  $51.6 \pm 2.3$  min, and for ESWL —  $30.4 \pm 3.1$  min. There were no intraoperative hemorrhagic complications. Intraoperative blood loss during open ureterolithotomy was  $123.2 \pm 12.4$  ml, and URLT was 0.

**Conclusion.** It should be noted that the tendency of modern urology to expand the indications for minimally invasive surgical interventions in KSD is justified, their effectiveness has been proven by practice and a long period of observation of patients, and good functional results. Minimal invasive surgical aids have become standard methods of treating KSD, which is due to both medical and economic efficiency (short postoperative period, shortening of the patient's stay in the hospital).

Urinary stone disease (STD) is one of the most common urological diseases, second only to non-specific inflammatory diseases of the kidneys and urinary tract in the world, and occurs in at least 5% of the population. Among all urological diseases, its share is about 40%. In Europe, the prevalence of STK is 5-10%, in the USA - 7-15%, in eastern countries - 1-5%. In Russia in 2016, the annual increase in the number of patients with newly diagnosed STK was 21.3%. In 2016, 866,742 patients diagnosed with urolithiasis were registered (1,5,8,9). The increase in the disease, the severity of complications, the tendency to relapse, and the large number of young and able-bodied people have made the treatment of nephrolithiasis one of the most important problems of surgery (2,3).

Despite the increased incidence, mortality from urolithiasis has decreased significantly in recent decades, because extracorporeal shock wave lithotripsy (EZTL), contact ureterolithotripsy (KULT), percutaneous nephrolithotripsy (PNLT), retrograde ureterolithotripsyurotropy (RIRS) has been widely used. due to its use, today the mortality is reduced to zero (4). Until 2007, EZTL was the main treatment method for nephrolithiasis due to its non-invasiveness and high efficiency (6,7). A retrospective analysis of the results of treatment of patients with CTK (1985-2014) showed that the share of remote technologies decreased over the years from 85.6% to 21.3%, and retrograde endoscopic methods increased from 4.4% to 76%. 'raised (10) .

The purpose of this work is to evaluate the effectiveness of surgical methods in the treatment of patients with urinary stone disease and to recommend the best methods of minimally invasive surgical interventions.

The results of the study and treatment of 205 patients with STK observed in the urology department of Samarkand clinics became the basis for achieving the goals set in the work and solving the tasks. Patients were divided by gender as follows: men - 109 (53.2%), women - 96 (46.8%). The average age of patients was  $50.7 \pm 3.5$  years.

The distribution of patients by gender and age is presented in Table 1.

**Table 1.**

Age of patients in years	Number of patients	
	Men	Women
21-30.	12	17
31-40	25	22
41-50	38	31
51-60	21	16
61-70	11	9
Over 70 years old	2	1
Total:	109	96

Patients of working age (from 18 to 50 years) accounted for 70.4%, which indicates the socio-economic importance of the problem.

A comprehensive urological examination was carried out to make a diagnosis, determine the indications and plan the operation, including the study of complaints and medical history, physical examination, clinical tests of blood and urine, determination of sensitivity to antibacterial drugs by bacteriological analysis of urine. , ultrasound, radiologic diagnostic methods (general and excretory urography, mutispiral computer tomography), radioisotope scintigraphy of kidneys.

X-ray examination was carried out on a digital X-ray machine of the General Electric company and includes a general image of the urinary tract, excretory, retrograde or antegrade (according to indications) urography. To diagnose urological diseases, including urolithiasis, Multispiral Computed Tomography (MSCT) has been implemented in BrightSpeed Multispiral Computed Tomography from General Electric.

The advantage of the method is that it is non-invasive and gives high information - it has the ability to obtain information not only about the structure of the pyelocaliceal system, but also about the angioarchitectonics of the kidney (the presence of large segmental vessels in the puncture zone) and the condition of the surrounding tissues. This information, together with traditional diagnostic methods, allows careful planning of planned surgical intervention, especially percutaneous nephrolithotripsy. Among the non-invasive methods for studying nephrolithiasis, ultrasound is the most widely used.

To systematize the main clinical material, all patients were divided into two groups depending on the location of the stone: the first group - patients with urinary tract stones - 132 patients, the second group - patients with kidney stones - 73 patients. 73 (35.6%) of those examined had kidney stones, 23 (11.2%) had stones in the upper third of the ureters, 27 (13.2%) had stones in the middle third of the ureters, Stones in the lower third of the urinary tract in 82 (40.0) people. In 104 (50.7%) patients, kidney and ureter stones were located on the right side, in 85 (41.5%) on the left side, and in 16 (7.8%) patients, bilateral localization was noted.

Bacteriuria was detected in 28 (13.6%) patients. In nephrolithiasis, Escherichia coli has been identified as the main cause of pyelonephritis. Traditional open operations - ureterolithotomy,

pyelolithotomy, nephrolithotomy - were performed according to classical instructions and methods. Soft tissue was performed with a lumbotomy incision. The retroperitoneal cavity was opened, and the lower pole of the kidney, the posterior or anterior surface of the extrarenal pelvis, and the upper third of the ureter were dissected sequentially.

Depending on the method of surgical intervention, both groups are divided into 4 groups.

I I - group - traditional open surgical treatment: ureterolithotomy and pyelolithotomy or nephrolithotomy (19 patients).

II II - group - X-ray endourological operations: contact ureterolithotripsy (KULT) and percutaneous nephrolithotripsy (PNL), RIRS (115 patients).

III III - group - distance shock wave lithotripsy (DZTL) of urinary tract and kidney stones - (104 patients).

IV IV - group - combined minimally invasive interventions for complex clinical forms of urolithiasis - 25 patients.

Thus, in groups II, III, IV, minimally invasive technologies were used as monotherapy, as well as their combination. The comparison group consisted of patients who underwent traditional open surgery.

Percutaneous stone removal was performed in one or two stages in a special operating room on an x-ray urological table. Single stones were removed in 77 of 128 operations (60.2%), and multiple stones were removed in 36 (28.1%). In 2 (1.6%) similar operations were performed for standard nephrolithiasis (K-2, K-3), 13 (10.5%) - for removal of residual stones. One-stage operations were performed under intubation anesthesia or epidural anesthesia and began with cystoscopy and retrograde ureteral catheterization on the operative side.

A 26 Sch nephroscope manufactured by Karl Storz was used. It was performed under the ultrasound and X-ray examination in the puncture of the cup-jam system. After viewing the stone in the pyelocaliceal system, assessing its size, shape and composition, the stone is removed completely or after preliminary disintegration. Stones up to 0.5 cm in diameter were completely removed using forceps. Hard forceps of various designs were used for extraction. If the size of the stones is larger than 1.5 cm, the stones are removed after disintegration using laser or ultrasound.

Contact ureterolithotripsy was performed with a ureterorenoscope 9 Sh under intravenous anesthesia or epidural anesthesia. If necessary, dilation of the urethral opening was performed with flexible bougies under visual control to 12 on the Sharier scale, then a rigid or flexible ureteroscope was inserted. On top of the stone, under vision control, Dormie's ring was passed. After ureterolithotripsy, stenting was completed to prevent exacerbation of renal colic and calculous pyelonephritis. The duration of the stay of the stent is determined individually. During drainage, all patients received antibiotic prophylaxis for postoperative pyelonephritis. Ultrasound lithotripsy was often used for kidney stones, and laser lithotripsy was used for ureteral stones.

Distance lithotripsy was performed on a Dorner Med Tex Delta 2 device. Patients underwent DZTL without anesthesia under X-ray or ultrasound guidance. The hardness of the stones ranged from 600 to 1500 HU. The number of shock-wave impulses required to destroy the stone varies from 800 to 3200 (average 2200) per DZTL session.

We evaluated the immediate and long-term outcomes after the operative period shown in Table 2.

Table 2.

Evaluation of recent and long past results depending on the type of operations

Indicator	Type of treatment			
	I (n=19)	II n=(115)	III (n=104)	IV (n=25)
<i>Recent treatment results</i>				
Duration of manipulation (minutes)	51,6, ± 2,3	43,9 ± 1,6	30,4 ± 3,1	55,1 ± 4,4
Duration of anesthesia (minutes)	60,6±4,1	51,8±2,1	0	60,8 ± 2,2
Blood loss (in milliliters)	123,2±12,4	41,2±6,1"	0	41,7±7,8"
Sleep duration (hours)	1,8 ± 0,9	24	0	24
Duration of wound drainage (kidney cup) - hours	3,7±0,6	24	0	3,2±0,3
A complication of the immediate past after the operation	4 (21,0 %)	7 (6,1%)	6 (5,8 %)	2 (8%)
Bed day after surgery	8 ± 1,7	2 ± 0,4	0	8,4 ± 1,7
Transversion	0	2 (1,7 %)	6 (5,8 %)	0
<i>Treatment is a long time in the past</i>				
Rehabilitation period (days)	14±3,1	5 ± 1,1"	0	12,1±1,3
Reintervention within 1 year	2 (10,5%)	5 (4,3 %)	0	0
Recurrence	1 (5,2 %)	2 (1,7 %)	1 (0,96 %)	1 (4,0 %)
Complications	1 (5,2 %)	1 (0,9 %)	0	1 (4,0 %)

Wound drainage and ureteral stenting, treatment of urinary fistulae, and length of hospital stay were compared. Long-term results of treatment were evaluated by clinical parameters, number of recurrences and late postoperative complications.

After minimally invasive interventions, the duration of the postoperative period is significantly shorter. In terms of time, endoscopic operations are close to traditional operations, but they are distinguished by the absence of blood loss, a mild postoperative period, and minimal rehabilitation

periods. There is practically no need for repeated manipulations. In both endoscopic operations and DZTL, blood loss is estimated to be zero.

There were significant differences in anesthesia and surgical time for stone removal from traditional operation and PNL, KULT. The duration of open operations was  $51.6 \pm 2.3$  min, and  $30.4 \pm 3.1$  min for EZTL. No hemorrhagic complications were observed during the operation. Intraoperative blood loss during open ureterolithotomy was  $123.2 \pm 12.4$  ml, and 0 during CULT.

Thus, it should be noted that the tendency of modern urology to expand the indications for minimally invasive surgical interventions in CTK is justified, their effectiveness is confirmed by practice and long-term follow-up of patients and good functional results. Minimally invasive surgical care has become the standard method of treatment of CTK, which is related to both medical and economic efficiency (short postoperative period, shortening of the patient's stay in the hospital).

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