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FEATURES OF THE POSTOPERATIVE PERIOD IN PATIENTS WITH UNCOMPLICATED FORMS OF URETEROLITHIASIS

O. D. Nikitin, I. M. Komisarenko

O. O. Bogomolets National Medical University, Kyiv, Ukraine

Nikitin O. D. - https://orcid.org/0000-0002-6563-7008
Komisarenko I.M. - https://orcid.org/0000-0003-0507-8483

Abstract

In order to study the possibilities of non-drainage management of the postoperative period in patients with uncomplicated ureteral stones, we analyzed the results of treatment of 198 patients with uncomplicated ureterolithiasis, in whom it was decided to refuse stenting of the upper urinary tract. In the uncomplicated course of ureterolithiasis, in most cases (68.2% of patients) in the postoperative period, there is no need for drainage of the upper urinary tract with stent. At the same time, in 31.8% of patients when a stent was not installed in the postoperative period, complications occurred that significantly affected the duration and cost of treatment. In the future a more rigorous consideration of risk criteria is needed to make a decision on non-drainage management of the postoperative period in patients with uncomplicated ureteral stones.

Key words: uncomplicated ureteral calculus; management of the postoperative period.

The urgency of the problem. The desire to avoid ureteral obstruction caused by wall edema and/or stone fragments is the main reason for routine upper tract stenting after ureteroscopy and has traditionally been considered the treatment standard [3]. At the same time, modern technical achievements, including the design features of miniscope ureteroscopes, the emergence of non-traumatic devices for the extraction of calculi and its fragments, the use of high-tech laser, ultrasound and other devices for contact disintegration of the stone, made modern ureteroscopy relatively atraumatic and easily tolerated. An intervention that allows in most cases to avoid the use of ureteral stents [1, 4].

It should be taken into account that the installation of a stent entails additional costs associated with the cost of the stent itself, a deterioration in the patient's quality of life, an increase in the duration of postoperative treatment, and the need to perform cystoscopy for de-stenting [2, 6].

Undoubtedly, the rejection of the unnecessary use of stents in certain cases after ureteroscopy will significantly improve the results of treatment, reduce its duration, the number of complications and avoid deterioration in the patient's quality of life [5, 7].

Purpose. To study the possibilities of non-drainage management of the postoperative period, to identify risk factors for the occurrence of postoperative complications in patients with uncomplicated ureteral calculi.

Materials and methods. We analyzed the results of treatment of 198 patients with uncomplicated ureterolithiasis. It was decided not to stent the upper urinary tract after endoscopic removal of the ureteral calculus in all cases. When performing ureteroscopy, an 8.5 Fr ureteroscope K. Storz was used. A SwissLithoclast pneumatic lithotripter was used to disintegrate the calculus. After the destruction of the calculus and extraction of the fragments, a thorough visual assessment of the state of the ureteral mucosa in the area of the stone location was carried out for the presence of bedsores, mucosal injuries, narrowing of the lumen due to edema or stricture. After that, on an individual basis, taking into account the patient's condition, the data of the preoperative examination, the duration of the disease, a decision on non-drainage management of the patient after the operation was made.

At the same time, in 135 (68.2%) patients, despite the refusal to install a stent, no complications were noted in the postoperative period (subgroup 1A), while in 63 (31.8%) patients, complications of various intensity, requiring a change in the tactics of their postoperative management, and in some cases, additional procedures (subgroup 1B) took place.

The results obtained and their discussion

To identify the factors influencing the decision on non-drainage management of the patient in the postoperative period, as well as factors that could be predictors of postoperative complications, we analyzed the following indicators: age, gender, height, body weight, body mass index, comorbidities, duration and number of attacks, intensity of pain syndrome, intensity of pain in the lumbar region, body temperature, size and area of the stone, localization in the ureter, degree of leukocyturia determined before removal of the calculus, indicators of leukocytosis, Hb, LII, calculus extraction method, operation duration.

The results of a comparative analysis of demographic and anthropometric parameters of subgroups 1A and 1B patients are given in Table 1.

Table 1 - Demographic indicators in subgroups 1A and 1B

Indicator	1A		1B		p
	M±m, n=135	interval/ value	M±m, N=63	interval/ value	
Age, years	47,80±0,64	16-85	40,86±0,97	19-77	>0,05
Men, %	62,22±4,17%	84	57,14±6,23%	36	>0,05
Women, %	37,78±4,05%	51	42,86±6,31%	27	>0,05
height, cm	169,73±0,37	152-185	169,57±0,58	156-183	>0,05
Body weight, kg	77,33±1,13	45-105	74,49±1,67	53-95	>0,05
Body mass index, rel. units	26,84±0,37	18,59-36,20	25,87±0,58	19,0-35,32	>0,05
Localization on the right, %	46,67±4,29%	63	66,67±5,94%	42	<0,05
Localization on the left, %	53,33±4,11%	72	33,33±5,02%	21	<0,05
Concomitant diseases, %	51,11±4,30%	69	42,86±5,23%	27	<0,05

The age of subgroup 1A patients ranged from 16 to 65 y. o. (mean – 47.80 ± 0.64) and in subgroup 1B - from 19 to 57 y. o. (mean - 40.86±0.97), differences are not significant, p>0.05.

There were 84 men in subgroup 1A (62.22±4.17%), and in subgroup 1B - 36 (57.14±6.23%), differences are not significant, p>0.05.

The number of female patients in subgroup 1A was 51 (37.78±4.05%), and in subgroup 1B 27 (42.86±6.31) - the differences were not significant, p>0.05.

The growth of subgroup 1A patients ranged from 152 to 185 cm (mean - 169.73 ± 0.37 cm), and in subgroup 1B it varied from 156 to 183 cm (mean - 169.57±0.58 cm), no difference, p>0.05.

The body mass index in 1A subgroup was 45-105 kg, (mean - 77.33±1.13 kg), and in 1B subgroup it was 53-95 kg (mean 74.49±1.67 kg; differences are not significant, p >0.05).

The body mass index (BMI), calculated as a quotient of the height and the square of the patient's body weight, in patients of the 1A subgroup ranged from 28.59 to 36.20 rel. units (mean 26.84±0.37), and in patients of subgroup 1B - from 19.0 to 35.32 rel. units (mean 25.84±0.58 rel. units; differences in indicators are not significant, p>0.05).

On the right, calculi were localized in 63 or 46.67±4.29% in subgroup 1A patients and 42 or 66.67±5.94% of patients in subgroup 1B (differences are significant, p<0.05). Calculi were localized in the left ureter in 72 or 53.33±4.11% of subgroup 1A patients and in 21 or 33.33±5.02% of subgroup 1B patients (differences are significant, p<0.05).

Concomitant diseases were noted in 69 (51.11±4.30%) patients of subgroup 1A and 27 (42.86±6.23%) patients of subgroup 1B, that is, significantly less often (p<0.05). The structure of comorbidities in patients of the subgroups under analysis is shown in Fig. 1.

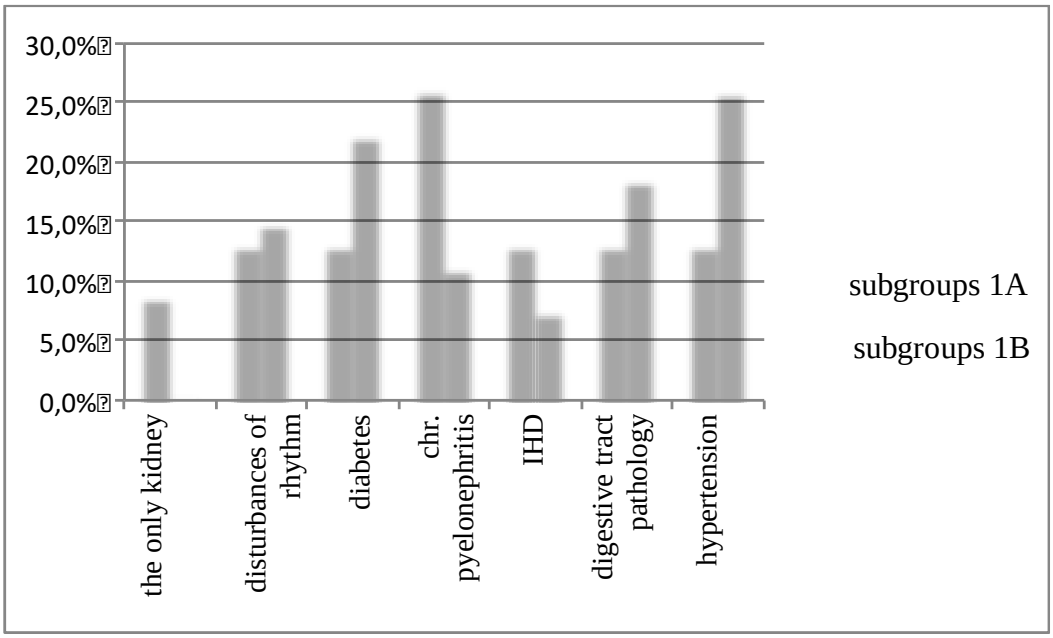

Fig. 1. Structure of comorbidities in patients of subgroups 1A and 1B

At the same time, out of 69 patients with concomitant diseases in subgroup 1A, 6 (8.7%) patients had a single kidney. 27 patients with concomitant diseases in subgroup 1B did not have this pathology. Cardiac arrhythmias occurred in 9 (13.0%) patients in subgroup 1A

and in 4 (14.8%) patients in subgroup 1B. Diabetes mellitus occurred in 9 (13.0%) patients of group 1A and 6 (22.2%) patients of group 1B.

Chronic pyelonephritis without exacerbation occurred in 18 (26.1%) patients of subgroup 1A and in 3 (11.1%) patients in subgroup 1B. Coronary heart disease of varying severity was detected in 9 (13.0%) patients of subgroup 1A and 2 (7.4%) patients of subgroup 1B. Hypertension was noted in 9 (13.0%) patients of subgroup 1A and in 7 (25.9%) patients in subgroup 1B.

Pathology of various parts of the gastrointestinal tract was detected in 9 (13.0%) patients of 1A and 5 (18.5%) patients of subgroup 1B.

Thus, a comparative analysis of demographic and anthropometric data in patients of subgroups 1A and 1B did not reveal any features that could affect the occurrence of postoperative complications in patients with ureteral calculi if they refuse to install a ureteral stent.

We carried out a comparative analysis of the disease clinical picture indicator in patients of subgroups 1A and 1B (see Tab. 2).

Table 2 - Comparative analysis of indicators of the clinical picture of the disease in subgroups 1A and 1B

Indicator	**1A**		**1B**		**p**
	M±m, n=135	**range/ value**	**M±m, n=63**	**range/ value**	
Disease duration	4,49±0,28	1-15	5,16±0,23	3-12	>0,05
N of colic attacks	1,59±0,17	1-4	1,55±0,10	1-3	>0,05
Pain syndrome intensity, points	6,99±0,17	2-10	7,05±0,25	2-10	>0,05
Body temperature, ^{0}C	36,84±0,13	36,5-38,8	36,58±0,04	36,4-37,9	>0,05
Localization in upper/3 of the ureter, %	31,11±3,98	42	26,98±4,41	17	>0,05
Localization in middle/3 of the ureter, %	15,56±3,12	21	23,81±3,70	15	>0,05
Localization in low/3 of the ureter, %	53,33±4,29	72	49,20±5,37	31	>0,05
Pain is absent	8,69±2,45	12	4,76±2,68	3	>0,05
Moderate pain	35,56±4,12	48	38,10±6,12	24	>0,05
Severe pain	55,56±4,28	75	57,14±6,23	36	>0,05

The duration of the disease in patients of subgroup 1A ranged from 1 to 15 days, on average 4.49 ± 0.08 days, in patients of subgroup 1B this indicator varied within 3-12 days, on average 5.16 ± 0.23 days (differences absent, p>0.05).

In 1A subgroup patients were noted from 1 to 4 attacks of renal colic before admission on average 1.59 ± 0.17, and in patients of subgroup 1B, there were from 1 to 3 colic attacks (1.55 ± 0 10 mean; differences are not significant, p>0.05). The patients were asked to indicate the intensity of the attacks in points and the highest equalled 10. In subgroup 1A this indicator ranged from 2 to 10 points, averaging 6.99 ± 0.17. In subgroup 1B this indicator value also ranged from 2 to 10 points, averaging 7.05±0.25 (differences are not significant, p>0.05).

The maximum body temperature at the pre-hospital stage in patients of subgroup 1A ranged from 36.5°C to 38.8°C, mean 36.84±0.13°C, and in patients of subgroup 1B it ranged from 36.4°C to 37.9°C, in the average amounting to 36.58±0.04°C (no significant differences, p>0.05).

In the upper 1/3 of the ureter, the calculus was localized in 42 patients (31.11±3.98%, subgroup 1A) and 17 (26.98±4.41%, subgroup 1 B; differences are not significant, p>0.05).

Localization of the calculus in the middle 1/3 of the ureter was noted in 21 patients of subgroup 1A or in 15.56±3.12% of cases. The same localization in subgroup 1B occurred in 15 patients, (mean 23.81±3.70%; differences are not significant, p>0.05).

Pain during tapping of the iliac region was absent in 12 (8.69±2.45%) 1A subgroup patients. In subgroup 1B this symptom was absent in 3 patients (4.76±2.68%; no difference, p>0.05). Moderate pain was noted in 48 patients of subgroup 1A, or 35.56±4.12%, and in subgroup 1B moderate pain occurred in 24 or 38.10±6.12 patients (differences are not significant, p >0.05). Severe pain when tapping the iliac region occurred in 75 (55.56±4.28%) patients.

Under study the clinical picture of the disease, we did not find signs that could reliably indicate the occurrence of complications in patients with uncomplicated ureterolithiasis in case of refusal to install a stent.

Optical imaging of the urinary tract - ultrasound, plain and excretory urography, CT (Table 3) was carries out and the data obtained were compared, too.

Pyeloureterectasia during ultrasound, excretory urography, CT scan was not detected in 24 (17.78±3.29%) patients of subgroup 1A and 14 (22.25±5.24%) patients of subgroup 1B. Differences are not significant, p>0.05. The presence of pyeloureterectasia was recorded in

111 patients of subgroup 1A (82.22±3.25%) and in 49 patients in subgroup 1B, that is, in 77.78±5.24% of cases (there are no differences, p>0.05).

Table 3 - Comparative analysis of the results of imaging studies in patients of subgroups 1A and 1B

Indicator	**1A**		**1B**		**p**
	M±m, n=135	**range/ value**	**M±m, n-63**	**range/ value**	
Pyeloureterectasia was not detected	17,78±3,29%	24	22,22±5,24%	14	>0,05
Pyeloureterectasia was detected	82,22±3,25%	111	77,78±5,24%	49	>0,05
Stone size, smallest, mm	4,46±0,13	2-7	4,21±0,20	2-7	>0,05
Stone size, largest mm	5,18±0,10	3-7	5,15±0,16	3-7	>0,05
Stone area, mm^2	19,81±0,85	4,7-38,5	18,27±1,31	6,3-38,5	>0,05

The smallest stone size in patients of subgroup 1A was 2-7 mm, on average 4.46±0.13 mm. In subgroup 1B, this indicator varied from 2 to 7 mm, with an average value of 4.21±0.20 mm (differences are not significant, p>0.05).

The largest size of the ureteral calculus in subgroup 1A patients was from 3 to 7 mm, averaging 5.18 ± 0.10 mm, and in subgroup 1B, it ranged from 3 to 7 mm (mean 5.15 ±0.16 mm; no difference, p>0.05).

The area of the calculus, determined as the product of its largest and smallest sizes in patients in subgroup 1Awas 4.7-38.5 mm2, on average 19.81±0.85 mm2, and in subgroup 1B it constituted 6.3-38.5 mm2, on average 27±1.31 mm2.

There were also no differences between the indicators, p>0.05.

The smallest stone size in patients of subgroup 1A was 2-7 mm, on average 4.46±0.13 mm. In subgroup 1B, this indicator also fluctuated in the range of 2-7 mm, with an average value of 4.21±0.20 mm (differences are not significant, p>0.05).

The largest size of the ureteral calculus in patients in subgroup 1A was from 3 to 7 mm, averaging 5.18 ± 0.10 mm, and in subgroup 1B, the value of this indicator also ranged from 3 to 7 mm, averaging 5.15 ±0.16 mm (no difference, p>0.05).

The area of the calculus, determined as the product of its largest and smallest sizes in patients in subgroup 1A, was 4.7-38.5 mm2, on average 19.81±0.85 mm2, and in subgroup 1B 6.3-38, 5 mm2, on average reaching 18.27±1.31 mm2. There were also no differences between the indicators, p>0.05.

As we can see, the analysis of this group indicators also did not reveal characteristic differences that could predetermine the development of postoperative complications in patients who did not have a ureteral stent installed after ureterolithoextraction.

A comparative analysis of laboratory parameters was also carried out in patients with uncomplicated ureteral calculi in both subgroups, the results of which are presented in Table 4

Table 4 - Comparative analysis of laboratory parameters in patients of subgroups 1A and 1 B

Indicator	**1A**		**1B**		**p**
	M±m, n=135	**range/ value**	**M±m, n=63**	**range/ value**	
No leukocyturia	31,85±3,01	43	41,27±2,20	26	<0,05
Leukocyturia up to 1/2 v.f.	30,37±3,96	41	38,10±3,12	24	>0,05
Leukocyturia over 1/2 v.f.	37,78±3,07	51	20,63±2,10	13	<0,05
Leukocytosis, G/l	8,57±0,38	3,11-28,8	8,37±0,46	3,6±20,8	>0,05
Hb, g/l	142,01±1,61	112-175	139,72±2,37	88-177	>0,05
LII, rel.units	6,35±0,13	3,9-11	6,37±0,20	4-10,2	>0,05

Leukocyturia, as one of the signs of urinary tract inflammatory process, was absent in 43 (31.85±3.01%) patients of subgroup 1A and in 26 (41.27±2.20%) patients of subgroup 1B ($p<0.05$), leukocyturia was absent significantly more often in the subgroup with postoperative complications, which apparently could not serve as a reliable criterion for stent placement.

Moderate leukocyturia, up to ½ of the visual field, occurred in 41 (30.37±3.96%) patients of subgroup 1A and in 24 (38.10±3.12%) patients of subgroup 1B (differences are not significant, p>0, 05). Leukocyturia of ½ visual field and more, up to the entire visual field was noted in 51 (37.78±3.07%) patients of subgroup 1A and in 13 (20.63±2.10%) patients in subgroup 1B, that is, pronounced leukocyturia occurred in patients with postoperative complications significantly less frequently ($p<0.05$), which also could not be a criterion for stent placement after removal of a ureteral calculus.

The concentration of leukocytes in the blood in subgroup 1A patients ranged from 3.11 to 28.8 G/l, (mean 8.57 ± 0.38 G/l), and in subgroup 1B from 3.6 to 20.8 G/l (mean 8.37±0.46 G/l; the differences are not significant, $p>0.05$).

The Hb index in patients of subgroup 1A was 112-175 g/l, on average 142.01±1.61 g/l, and in patients of subgroup 1B this indicator varied within 88-177 g/l, averaging 139.72 ±2.37 g/l ($p>0.05$, significant differences in the index in the subgroups were not revealed).

We used LII as an integral indicator characterizing changes in the blood formula of patients with ureterolithiasis. At the same time, in subgroup 1A, its value varied within 3.9-11.0 rel. units, on average 6.35±0.13 rel. units, and in subgroup 1B, the LII value ranged from 4 to 10.2 rel. units, averaging 6.37±0.20 rel. units (no difference, p>0.05).

The duration of the operation in subgroup 1A ranged from 18 to 24 minutes, averaging 18.97±0.37 minutes. In subgroup 1B of the data, the indicator ranged from 12 to 26 minutes, on average 19.26±0.54 minutes. Differences are not significant, p>0.05.

Thus, in a comparative analysis of most of the main indicators characterizing the demographic features, clinical picture, data of imaging and laboratory studies, we have not identified factors that significantly affect the likelihood of developing postoperative complications in patients with uncomplicated forms of ureteral calculi with refusal to drain the upper urinary tract with a stent.

At the same time, the analysis of laboratory parameters in the early postoperative period showed a significant difference in them in patients of subgroups 1A and 1B (Table 5) when compared with the data of the control group and among themselves.

At the same time, the analysis of laboratory parameters in the early postoperative period showed a significant difference in them between subgroups 1A and 1B (Table 5) patients when compared with the data of the control group and among themselves.

Table 5 - Data of postoperative laboratory examination of patients with uncomplicated forms of ureterolithiasis on the 4th day after surgery

indicator	**norm (M±m)** n=26	**subgroup 1A (M±m),** n=135	**subgroup 1B (M±m),** n=63	**p**
Erythrocytes, T/L	3,97±0,27	3,70±0,08	3,24±0,18	p>0,05; p_1<0,05; p_2<0,05
Hb, g/l	131,44±1,24	129,45±3,1	108,31±4,80	p>0,05; p_1<0,05; p_2<0,05
Peripheral hematocrit, %	37,61±3,56	36,87±4,79	37,95±2,23	p>0,05; p_1>0,05; p_2>0,05
Leykocytes, g/l	7,29±0,53	7,88±0,71	15,61±3,51	p>0,05; p_1<0,05; p_2<0,05
LII, rel. units	0,96±0,09	1,01±0,19	2,62±0,44	p>0,05 ; p_1<0,05; p_2<0,05

Thus, the level of erythrocytes in the control group was 3.97 ± 0.27 T/l, in 1A subgroup this indicator on the 4th day after the operation was 3.70 ± 0.08 T/l (differences with the control group are not significant, p>0.05), and in subgroup 1B it was significantly lower (3.24±0.18 T/l; significant differences, pl<0.05 compared to the control group and p2<0.05 compared to subgroup 1A).

The Hb concentration was 131±1.24 g/l in 1A subgroup, the value of this indicator differed insignificantly, amounting to 129.45±3.1 g/l (differences are unreliable, p>0.05).

At the same time, in patients of subgroup 1B, this indicator was lower both in comparison with the control group and subgroup 1A, amounting to 108.31±4.80 (pl<0.05; p2<0.05). The hematocrit index in the control group and in both subgroups did not differ significantly, amounting to 37.61±3.56%, 36.87±4.79% and 37.95±2.23%, respectively (differences unreliable, p>0.05 in all cases).

The index of leukocytosis in the "control" group was 7.29±0.53 G/l. On the 4th day after the operation in subgroup 1A the value of this indicator did not differ significantly, amounting to 7.88±0.71 G/l (p>0.05, differences are not significant). At the same time, this indicator in patients of 1B subgroup was significantly higher, amounting to 15.61±3.51 G/l (differences are significant in comparison with both previous ones, p1<0.05; p2<0.05).

The LII indicator (as an integral indicator of changes in the leukocyte formula) in the control group was 0.96±0.09 rel. units. In subgroup 1A on the 4th day after the operation this indicator value did not significantly differ from that in the control group (p>0.05), while in subgroup 1B this indicator value was significantly higher and equalled to 62 ± 0.44 rel. units. This significantly exceeded the data both in the control group and in subgroup 1A.

We also analyzed some indicators of the postoperative period course in both subgroups (1A and 1B), the data are presented in Table 6.

Table 6 - The course of the postoperative period in patients with uncomplicated ureteral calculi

Indicator	**subgroup 1A (M±m),** n=135	**Subgroup 1B (M±m),** n=63	**P**
Normalization of the body temperature, days	1,04±0,56	7,18±0,91	p<0,05
Low back pain, days	0,76±0,07	4,05±0,49	p<0,05
Leukocyturia, days	4,35±0,21	12,01±1,01	p<0,05
Parental administration of antibiotics, days	1,36±0,32	6,42±0,75	p<0,05
Stay in bed after surgery, days	3,34±0,08	8,05±0,82	p<0,05

Thus, the normalization of body temperature in 1A subgroup patients occurred on average at 1.04±0.56 days, and in subgroup 1B at 7.18±0.91 days (significant differences, p<0.05). The involution of lower back pain, usually aching, in patients of subgroup 1A occurred on 0.76±0.07 day of the postoperative period, and in patients of subgroup 1B much later, on 4.05±0.49 day (significant differences, p< 0.05).

Normalization of urinalysis, in particular, the disappearance of leukocyturia in patients of subgroup 1A took place in 4.35+_0.21 days after surgery, and in subgroup 1B it also was much later - 12.01±1.01 days of the postoperative period.

Parenteral administration of antibiotics in patients of subgroup 1A was carried out for 1.36±0.08 days, and in patients of subgroup 1B for 6.42±0.75 days (significant differences, p<0.05). The length of stay in bed after surgery in subgroup 1A was 3.34±0.08 days, and in subgroup 1B it was significantly longer - 8.05±0.82 days (p<0.05).

We carried out a detailed analysis of postoperative complications in patients of subgroup 1B, which is presented below (Table 7).

Table 7 - Structure of early postoperative complications in patients of subgroup 1B (n=63)

№	complications	Number		Dur. Treatment, days	
		Abs.	%	Interval	M±m
1	Exacerbation of pyelonephritis	33	52,38±6,29%	4-11	6,21±0,49
2	Asymptomatic pyeloureterectasia	21	33,33±5,94%	5-14	8,83±0,42
3.	Ureteropyeloectasia with pain syndrome	10	15,87±4,60%	3-9	4,02±0,73
4.	Septic condition состояние	2	3,17±1,21%	8-14	-

The most frequent complication noted in 33 (52.38±6.29%) patients of this subgroup was exacerbation of chronic pyelonephritis. This complication was manifested by body temperature increase up to 38-38.5°C, dull pains in the lumbar region. Changes in urine tests (leukocyturia, pyuria) were noted. However, in some patients a moderate expansion of the urinary tract was marked. The complication arose in 1-3 days after the operation. For the treatment of pyelonephritis, parenteral administration of antibacterial drugs - fluoroquinolones, cephalosporins - was used. Infusion detoxification therapy was conducted. After normalization of the condition, usually in 2-3 days, treatment was continued with the use of tableted antibacterial preparations.

Asymptomatic pyeloureterectasia after URS with lithoextraction in patients of the subgroup 1B was noted in 21 (33.33±5.94%) cases. At the same time, only 5 (7.94±1.41%) patients had moderate ureteropyeloectasia. In the rest 16 (25.4±3.48%) patients, a significant dilation of the urinary tract was noted on the side of the surgical intervention. This complication was detected during the control ultrasound examination on the 2nd day after the operation. Despite the absence of pain syndrome, temperature, and other symptoms of urinary tract obstruction, we carried out prophylactic antibiotic therapy, used diclofenac in rectal suppositories for anti-inflammatory purposes and to reduce the manifestations of local ureteral edema. This complication was stopped during conservative measures in 7 (11.11±2.96%) patients within 1-2 days. In the rest 14 (22.22±5.24%) patients, a stent was installed to stop the complication in order to prevent the development of obstructive pyelonephritis. The duration of stenting was 7 days. After stent's removal, none of the patients had re-dilatation of the upper urinary tract.

Ureteropyeloectasia with pain syndrome of varying intensity was noted on the 2nd-3rd day after surgery in 10 (15.87±4.60%) patients. At the same time, both pains of a constant nature of moderate intensity and attacks of renal colic were noted. To stop this postoperative complication, stent placement was performed in all patients without exception. The latter was removed on the 7th day. The complication was stopped in all patients.

In 3 (3.17±1.21%) patients of this subgroup, against the background of severe ureteropyeloectasia and exacerbation of pyelonephritis, the development of a septic state was noted. This complication was manifested by a rise in body temperature up to 39.0-41.00C, chills, sharp pains in the lumbar region, and general weakness.

The patients urgently underwent the installation of a puncture nephrostomy under ultrasound control for the purpose of draining the upper urinary tract. To stop the inflammatory process, parenteral administration of fluoroquinolones (*levofloxacin)* in combination with third-generation cephalosporins was used.

Symptomatic therapy included detoxification therapy by oral or intravenous fluid administration, anti-inflammatory, antipyretic drugs. Patients underwent intensive complex therapy, including correction of hypotension with the use of volemic drugs and vasopressors. It should be noted that in 3 (3.17±1.21%) patients, the above complications were combined.

Conclusions

In the uncomplicated course of ureterolithiasis, in 68.2% of cases there is no need for drainage of the upper urinary tract using a stent in the postoperative period,.

At the same time, in a number of cases, namely, in 31.8% of patients, when a stent was not installed in the postoperative period, complications occurred and that significantly affected the duration and cost of treatment. In some cases it required an increase of therapy volume, additional procedures order, i.e. installation of a stent and imposition of puncture nephrostomy.

In the future a more rigorous consideration of risk criteria is needed to make a decision on non-drainage management of the postoperative period in patients with uncomplicated ureteral stones.

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