Endoscopic Urethral Recanalization In Men As A Standard Of Treatment

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Abstract

The article summarizes the results of the analysis of treatment data of 53 patients who underwent endoscopic recanalization of the obliterated urethra, followed by electroresection of scar tissue. Clinical studies have shown that relapses, after intervention, by the end of 1 year of observation, occur in 18.9% of patients.

Key words: urethral obliteration, endoscopic treatment, effectiveness, stricture recurrence.

Introduction. Obliteration of the urethra is a severe urological pathology, which has an extremely negative impact on the patient's quality of life, condemning him to long-term, and sometimes lifelong, wearing of cystostomy drainage [9]. The problem of treating urethral obliterations remains one of the most difficult in urology, as evidenced by the high percentage of complications and relapses requiring multiple reoperations. The difficulty of treating obliterations, in contrast to urethral strictures, lies in the complete absence of the lumen of the urethra with its replacement by dense scar tissue [1,10, 11].

For cicatricial narrowing of the urethra, the range of choice of treatment method is quite wide. The lack of lumen of the urethra and pronounced scarring significantly limits the range of therapeutic agents. According to some authors, the main method in the treatment of obliterations should be surgical [7, 8].

In contrast to studies covering the results of endoscopic interventions for urethral stricture, only a few studies have been devoted to the evaluation of endoscopic operations aimed at correcting cicatricial obliterations of the urethra [2, 3, 4].

In this regard, the development of a new method of endoscopic recanalization of the urethra during its obliteration is of particular interest.

Purpose of the research. To improve the results of treatment of patients with cicatricial obliteration of the urethra.

Material and methods. The basis of the work was an analysis of the results of treatment of 53 patients with urethral obliteration who underwent a comprehensive examination, endoscopic treatment and further observation in the clinic of the Republican Specialized Scientific and Practical Medical Center of Urology. The age of the patients ranged from 13 to 80 years (mean

46.4±19.8 years). When visiting the clinic, all patients had a suprapubic cystostomy drainage, which was previously installed due to the inability to urinate independently.

The criteria for inclusion in the studies were: the presence of cicatricial obliteration of the urethra and bladder neck; high operational risk due to concomitant diseases; not wanting to risk sexual dysfunction; recurrence of cicatricial obliteration after unsuccessful reconstructive plastic surgery.

Exclusion criteria were: the presence of urethro-perineal urinary fistulas; pronounced deviation of the course and displacement of the ends of the urethra.

Clinical examination of patients included standard research methods used to diagnose stricture and obliteration of the urethra.

To restore the patency of the obliterated urethra, a new method of endoscopic treatment of urethral obliteration was used (Patent for invention No. IAP 05389, priority dated June 24, 2014), which consists of determining the localization and length of urethral obliteration, creating a primary urethral canal under the control of polypositional X-ray telescopy and electrical resection of scar tissue.

The effectiveness of endoscopic urethral recanalization was assessed by the maximum volumetric urine flow rate (Qmax) and the frequency of relapses of urethral stricture at 1, 6 and 12 months of observation, depending on the location and extent of obliteration.

Results. Analysis of the results of endoscopic urethral recanalization depending on the location of obliteration showed that independent urination was restored in all patients after the operation. In the initial observation periods (end of 1 month), the volumetric flow rate of urine in patients with obliteration located in the bladder neck averaged 17.2±0.6 ml/s. Subsequently, there was a slight decrease in Qmax values, and by the end of the study it reached values of 16.1±0.5 ml/s; $p > 0.05$ (Table 1).

Table 1.

Qmax after surgery at various follow-up periods depending on the location of obliteration (n=53)

Localization of obliteration		Qmax values (ml/sec)		
		1 month	6 months	12 months
Membranous part	(n=6)	15.5±0.5	13.2±0.4	12.1±0.4
Bulbar part	(n=8)	16.4± .6	13.4±0.6	12.6±0.5
Hanging part	(n=8)	15.7±0.7	12.3±0.6	11.2±0.9
Bladder neck	(n=27)	17.2± 0.6	15.9±0.5	16.1±0.5
Two parts	(n=4)	15.4±0.6	13.5±0.7	10.1±0.7

In patients with a stricture located in the membranous, bulbar and hanging part of the urethra, as well as in its two sections, the uroflowmetry indicator tended to decrease over the entire observation period. By the time the study was completed, the urination rate was statistically significantly lower than the initial figures ($p<0.05$) (Table 1).

Recurrence of stricture was more common in patients with obliteration located in two parts of the urethra; by the end of the study, stricture recurrence occurred in 50% of patients. In patients with obliteration located in the membranous, bulbar and hanging part of the urethra, this indicator tended to increase, and by the end of the study it was 33.3%, 37.5% and 25.0%, respectively (Table 2).

In patients with obliteration located in the area of the bladder neck, during the observation period only in 1 (3.7%) case there was a recurrence of the stricture (Table 2).

Thus, the Qmax indicator in patients with obliteration located in the bladder neck was more significant, stable and long-lasting (until the end of 12 months of the study) than in patients with other localization of obliteration. At the same time, the frequency of stricture recurrences was significantly lower in patients with obliteration located in the area of the bladder neck.

Table 2.

Frequency of recurrence after surgery at various follow-up periods depending on the location of obliteration (n=53)

Localization of obliteration	Recurrence rate (n, %)			Total
	1 month	6 months	12 months	
Membranous part (n=6)	-	1 (16,7%)	1 (16,7%)	2 (33,3%)
Bulbar part (n=8)	1 (12,5%)	-	2 (25,0%)	3 (37,5%)
Hanging part (n=8)	-	1 (12,5%)	1 (12,5%)	2 (25,0%)
Bladder neck (n=27)	-	-	1 (3,7%)	1 (3,7%)
Two parts (n=4)	1 (25,0%)	-	1 (25,0%)	2 (50,0%)
Total	2 (3,8%)	2 (3,8%)	6 (11,3%)	10 (18,9%)

Analysis of treatment results depending on the extent of obliteration showed that the volumetric flow rate of urine in patients of the first group during the observation process did not show statistically significant differences. In the initial observation periods (end of 1 month), the volumetric flow rate of urine in these patients averaged 16.2 ± 0.5 ml/s. By the end of the observation period (end of 12 months), there was an insignificant decrease in Qmax values (by 3.1%), to values of 15.7 ± 0.7 ml/s; $p>0.05$ (Table 3).

Table 3.

Qmax after surgery at various follow-up periods depending on the extent of obliteration (n=53)

Groups	Length of obliteration	Показатели Qmax (мл/сек)		
		1 month	6 months	12 months
I group	to 0,5 см (n=8)	16.2±0.5	16.1±0.7	15.7±0.7
II group	from 0.6 to 1.0 cm (n=38)	15.3±0.5	13.4±0.6	11.7±0.8
III group	more than 1.0 cm (n=7)	15.5±0.5	11.3±0.6	9.4±0.6

In patients of the second and third groups, the uroflowmetry indicator tended to decrease. By the end of the study, in the second group, Qmax worsened by an average of 23.5%, in the third group - by 39.4% (Table 3).

When comparing the treatment results in terms of Qmax between groups, it was revealed that by the end of the study, a statistically significant increase in the volumetric flow rate of urine was observed in patients of the first group (p<0.05), compared with patients of the second and third groups.

Thus, a statistically significant improvement in urine flow was observed only in patients with urethral obliteration up to 0.5 cm in length, starting from 1 month until the end of the study.

Analysis of the frequency of relapses depending on the extent of obliteration showed that relapses of the stricture were more often observed in patients of the third group; during the observation, the number of relapses steadily increased, reaching 57.2% by the end of the study. In patients of the second group, this indicator also tended to increase during the observation period, and by the end of the study it was 13.2%. In patients of the first group, only by the end of the study in 1 (3.7%) case there was a recurrence of the stricture (Table 4).

Table 4.

Frequency of relapses after surgery at various follow-up periods depending on the extent of obliteration (n=53)

Groups	Length of obliteration	Recurrence rate n (%)			Total
		1 month	6 months	12 months	
I group (n=8)	to 0,5 см	-	-	1 (12,5%)	1 (12,5%)
II group (n=38)	from 0.6 to 1.0 cm	1 (2,6%)	1 (2,6%)	3 (7,9%)	5 (13,2%)

III group (n=7)	more than 1.0 cm	1 (14,3%)	1 (14,3%)	2 (28,6%)	4 (57,2%)
Total		2 (3,8%)	2 (3,8%)	6 (11,3%)	10 (18,9%)

When comparing the results of treatment in terms of the frequency of relapses between groups, it was revealed that by the end of the study, stricture relapses were statistically significantly more common in patients of the third group (p<0.05), compared with patients of the first and second groups.

Thus, it was determined that the average rate of recurrence of urethral stricture after endoscopic urethral recanalization is 18.9%, and the results of treatment depend on the extent of obliteration.

Discussion.

According to some authors, the unjustified widespread use of endoscopic techniques and ignoring the indications for open urethroplasty may lead to an increase in the incidence of extended anterior urethral strictures in the future [5].

However, in weakened patients or in patients who have refused radical treatment, the use of endourethral procedures is possible as a palliative treatment. Despite the fact that the effectiveness of endourethral methods does not exceed 10-35%, most urologists are in no hurry to abandon their use. According to modern recommendations, bougienage and internal optical urethrotomy can be used as the first line of treatment only in patients with short (less than 1 cm), single strictures of the bulbous urethra without significant spongiofibrosis [6].

Considering the scarcity of works covering the results of endoscopic interventions for cicatricial obliteration of the urethra, we set out to develop a new method of endoscopic recanalization of the urethra during its obliteration. According to this method, the primary canal at the site of urethral obliteration is created using various dilating devices, focusing on the end of a metal bougie inserted into the posterior urethra through the suprapubic vesical fistula canal, control is carried out using polypositional X-ray telescopy.

The implementation of this technique made it possible to carry out the intervention without the threat of damage to the rectum and urethra, with the formation of a false tract.

The average duration of the operation was 36.3±2.5 minutes. The need for bladder drainage after surgery averaged 23.1±1.2 days (range 21-29 days). The average patient stay in the hospital (bed days) was 6.1 ± 2.7 days (range 1-16 days).

Among the most serious intraoperative complications was bleeding, which was observed in 1 patient (1.9%). The cause of intraoperative bleeding was damage to the submucosal veins of the bladder neck during antegrade insertion of a metal bougie into the urethra. No replacement of blood loss was required; the bleeding was stopped by inserting a Foley catheter through the urethra and squeezing the bleeding vessel with the catheter balloon.

Among postoperative complications, the most common were infectious and inflammatory complications - in 7 (13.2%) patients. Of these, 6 patients had urethritis, 1 had acute prostatitis.

The cause of postoperative infectious and inflammatory complications in all cases was the presence of a urinary tract infection before the main intervention.

During the observation process, the number of relapses steadily increased, reaching 18.9% by the end of the study. It was found that treatment results depend on the location and extent of obliteration.

Unfortunately, at present, we do not have data on the results of the study at longer follow-up periods. The work has its continuation. We hope that endoscopic recanalization of the urethra will find its rightful place among endoscopic interventions for cicatricial obliterations of the urethra

Conclusion. Endoscopic urethral recanalization is an accessible and effective method in the treatment of patients with urethral obliteration. Relapses after this type of intervention occurred in 18.9% of patients by the end of 1 year of observation.

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