Research Article

# The lower urinary tract symptoms in patients after transurethral resection of benign prostatic hyperplasia

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**ABSTRACT**

Urination disorders progress with age and have no gender. According to the literature, benign prostatic hyperplasia (BPH) frequently serves the cause of lower urinary tract symptoms (LUTSs). In most patients, conservative therapy provides a good quality of life. In some patients, progressing symptoms that require surgical treatment. Transurethral resection (TUR) is most commonly used in the treatment of BPH. However, according to studies, the frequency of long-term persistence of LUTS after TUR may be more than 30%. We performed a retrospective analysis of medical records and prospective evaluation of TUR in the long term, which was carried out in patients with BPH. The real picture of the possibilities of examination and treatment of patients with LUTS together with urological can be accessed from portal UroWeb.ru. A survey of urologists in the public domain was conducted. Such an indication, as the ineffectiveness of conservative therapy has been established for young patients with a small volume of the prostate. TUR in this group of patients often continues LUTS and requires further medical treatment. The probability of the development of urethral strictures after TUR BPH is 15.4%. Conducting functional diagnosis of lower urinary tract will narrow the indications for surgery of BPH and in the post-operative period to choose the rational approach to treatment.

**KEY WORDS:** Benign prostatic hyperplasia, Dysuria, Lower urinary tract symptoms, Lower urinary tract symptoms, Syndrome of chronic pelvic pain, Transurethral resection, Urethral stricture

## INTRODUCTION

Urination disorders progress with age and have no gender.[1] Despite the fact that, there is no longer any doubt about the polyethiologic nature of urinary problems in men,[1-3] benign prostatic hyperplasia (BPH) is most often serves as the cause of this pathology.[2] This is due to the natural correlation of the frequency of lower urinary tract symptoms (LUTSs) and BPH with the age of patients [Figure 1].[1,3,4]

A powerful pharmacological breakthrough has provided us with a wide choice of therapeutic agents that affect the various links of the pathogenesis of symptoms of the lower urinary tract.[2,5] However, there is the category of patients with progression of bladder outlet obstruction syndrome on the background of conservative treatment or new patients of urologists diagnosed with decompensation of lower urinary tract that requires surgical treatment.[6,7]

Transurethral resection (TUR) of the prostate has long been recognized as the "gold standard" in the treatment of BPH.[8] Despite this, the failure rate after TUR for prostate adenoma is high enough so that, according to several studies, frequency of long-term persistence of post-TUR LUTS may be >30%.[9,10]

### Objective of the Research

The objective of this study was to evaluate the long-term effectiveness of TUR performed in patients with BPH.

## MATERIALS AND METHODS

We conducted a retrospective analysis of medical documentation and the evaluation of the long-term effectiveness of TUR performed in patients with BPH. The criterion for inclusion in the study was the

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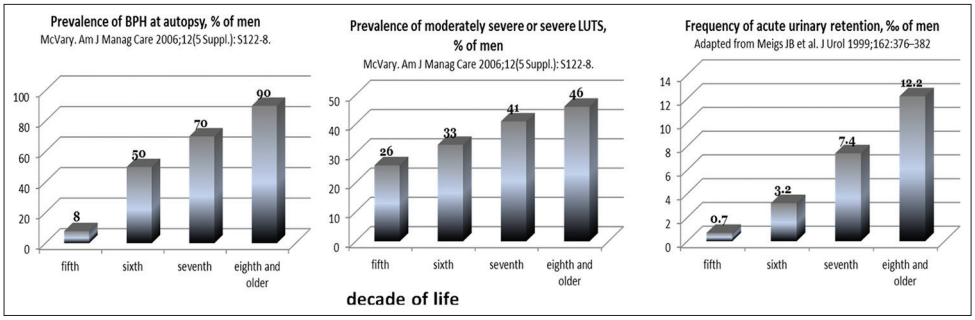


**Figure 1:** Correlations in the prevalence of benign prostatic hyperplasia, lower urinary tract symptoms, and acute urine difficulty, depending on the age of men

indication for surgery such as the ineffectiveness of conservative therapy in the absence of a large volume of residual urine (<50 ml), a period of up to 3 years after the TUR; the exclusion criteria were as follows: inflammatory changes in the urinary sediment, incidental prostate cancer, bladder cancer, urethral stricture, and severe cardiovascular decompensation. The severity of LUTS was assessed by the results of the questionnaire on the international prostate symptom score (IPSS) scale and the results of ultrasound examination of the lower urinary tract and uroflowmetry. In the case of signs of infravesical obstruction, patients underwent urethrography.

In addition, to assess the real picture of the possibility of examination and treatment of patients with neurogenic and non-neural LUTS, a freely available survey of urologists was conducted together with urological portal UroWeb.ru. The suggested questions concerned the diagnosis and treatment of LUTS in men and women, as well as in patients with neurogenic dysfunction. This review includes issues related to bladder hyperactivity in men.

## RESULTS AND DISCUSSION

The group included 52 patients at the average age of 58.5 ± 6.4 years, according to inclusion and exclusion criteria. The prostate volume before the operation was within 42.7 ± 13.5 $cm^3$, the volume of residual urine was 27.1 ± 17.6 ml and the patients had no inflammatory changes in the urine sediment. We could not retrospectively evaluate the results of IPSS and uroflowmetry, since they were absent in the medical records. According to the latter, no serious post-operative complications were noted in this group, the urethral catheter was removed on day 5.2 ± 1.7 on average, and the post-operative bed day was 7.8 ± 2.5 days.

Before surgery, 47 (90.4%) patients received medication: 45 (86.5%) of them received monotherapy and only two (3.8%) of them received combination therapy, including alpha-1-adrenoblocker and 5-alpha-reductase inhibitor. Among the drugs recommended in monotherapy, alpha-1 blockers, which were prescribed to 38 (73.1%) patients, were used as the unconditional leaders, three (5.8%) patients received 5-alpha-reductase inhibitor and six (11.5%) took herbal drugs. It is noteworthy that the duration of use of 5-alpha-reductase inhibitors was 3.6 ± 2.4 months.

The prostate specific antigen (PSA) level in pre-operative medical documentation was measured in 41 (78.8%) patients and amounted to 3.8 ± 2.1 ng/ml. The volume of resected tissue, according to the protocols of operations, reached 30.4 ± 10.9 $cm^3$. Morphologically, all patients were diagnosed with prostate adenoma, 34 (65.4%) histological findings indicated the presence of inflammatory infiltration. PIN (prostatic intraepithelial neoplasia) was evaluated, according to different classifications, the drugs were not reviewed and were reduced to the WHO Modified Classification, 1989 [Figure 2]. In this case, low-grade PIN was diagnosed in 24 (46.2%) patients, and high-grade PIN was in 13 (25%) patients.

The survey on the IPSS showed that the average score, more than a year after TUR, was 14.2 ± 8.5. Only 15 (28.8%) patients complained of mild symptoms in the lower urinary tract, 28 (53.8%) had moderate symptoms, and 9 (17.3%) had severe IPSS symptoms [Figure 3].

Instead of the standard question regarding the quality of life, we asked our respondents to answer the following question: "How do you assess the effect of surgical treatment?" They in turn offered the following answers: "I am satisfied," "I have some symptoms of the disease," "I feel worse after the operation." Despite the remaining symptoms in the lower urinary tract, more than half, namely, 29 (55.8%) patients were satisfied with the effect after TUR of the prostate. Another 11 (21.2%) said that the symptoms that occurred before the operation regressed. It should be noted that 12 (23.1%) patients showed negative response to the conducted surgery [Figure 4].

Ultrasound data indicate a significant decrease in the volume of the prostate - 19.4 ± 7.7 $cm^3$ relative to the initial data of 42.7 ± 13.5 $cm^3$ ($P < 0.05$), while

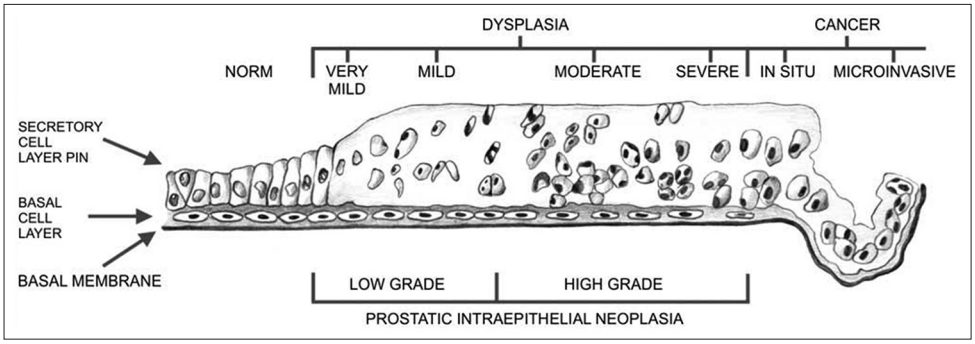


**Figure 2:** Compliance of classification of prostatic intraepithelial neoplasia according to D.G. Botswick *et al*., 1987 and the WHO Modified Classification, 1989.

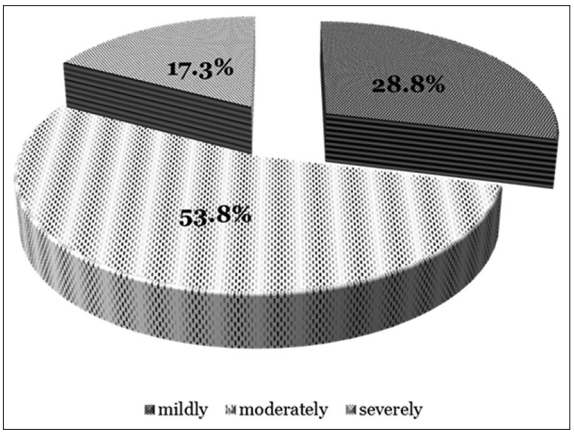


**Figure 3:** The severity of lower urinary tract symptoms according to IPSS survey data in the long-term post-operative period after transurethral resection of the prostate

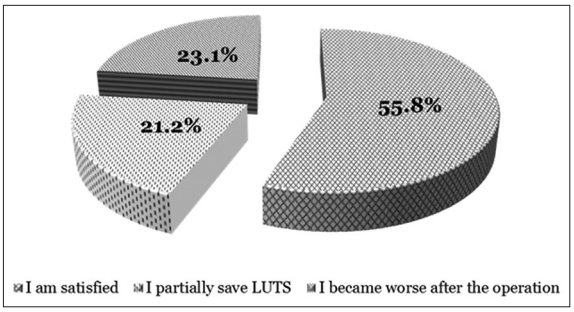


**Figure 4:** Subjective assessment of the effectiveness of performed surgical treatment in the long-term post-operative period after transurethral resection of the prostate

the volume of residual urine, although statistically insignificant, increased and amounted to 47.5 ± 28.3 ml ($P > 0.05$, [Figure 5].

Urofloumetric examination of patients revealed obstructive urination in 8 patients (15.4%), while urethrography diagnosed strictures of the bulbous urethra [Figure 6]. Moreover, only half of the patients in this group negatively assessed the results of TUR, three of them reported only a partial preservation of the symptoms, and one was completely satisfied with the treatment.

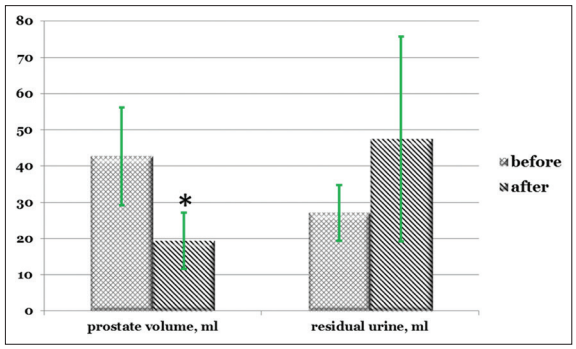


**Figure 5:** Ultrasound dynamics in pre- and post-operative period. *differences are statistically significant ($P < 0.05$)

Some of patients in a remote post-operative period undergo medical treatment for LUTS. At the same time, 15 (28.8%) continue to take alpha-1-adrenoblockers and 5 (9.6%) patients are prescribed a combination of the latter with selective M1-cholinolytics, and two (3.8%) patients take beta-3-adrenomimetic. The dynamics of medication for LUTS is shown in Figure 7.

Evaluating the results of the internet survey, we would like to say that the respondents were 48 urologists who were directly involved in the diagnosis and treatment of LUTS in different categories of patients. This is the most active part of the urological community, so the interpolation of the sample to the entire population will reflect the overall state of affairs. Probably, the current state of the problem is even less encouraging.

What do we have in the forefront of urologists dealing with the problems of bladder hyperactivity? Unfortunately, instrumental diagnostics of hyperactivity is available only in 20.3% of the treatment facilities where our respondents work, and 37.5% of urologists need to send patients outside the region to undergo integrated urodynamic examination. Therefore, medical urgency therapy in men, used by 91.7% of urologists involved in the survey, in the vast majority of cases is prescribed based on the questioning and analysis of various questionnaires.

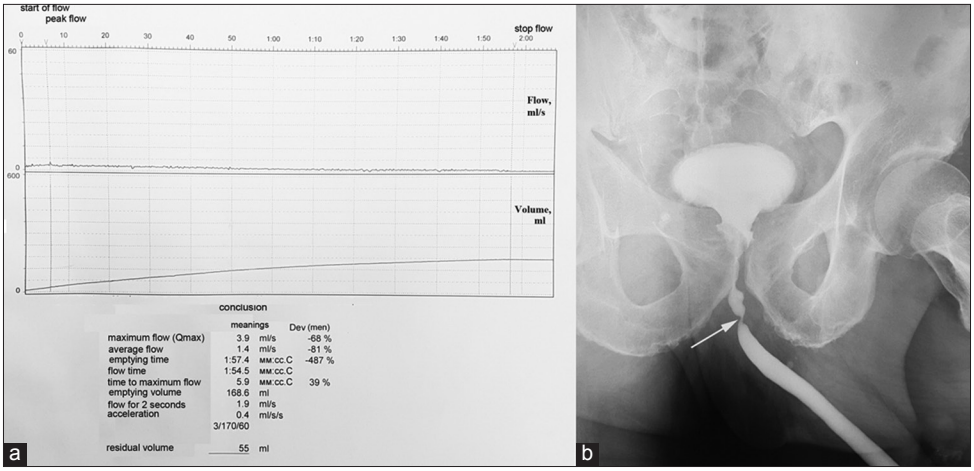


**Figure 6:** Uroflourogram (a) and retrograde urethrocystogram (b) of patient Ch. 61-year-old, 3 years after transurethral resection (TUR) of the prostate: (a) obstructive type of urination, (b) bulbous stricture (marked with an arrow) and conical enlargement of the prostatic urethra after TUR.

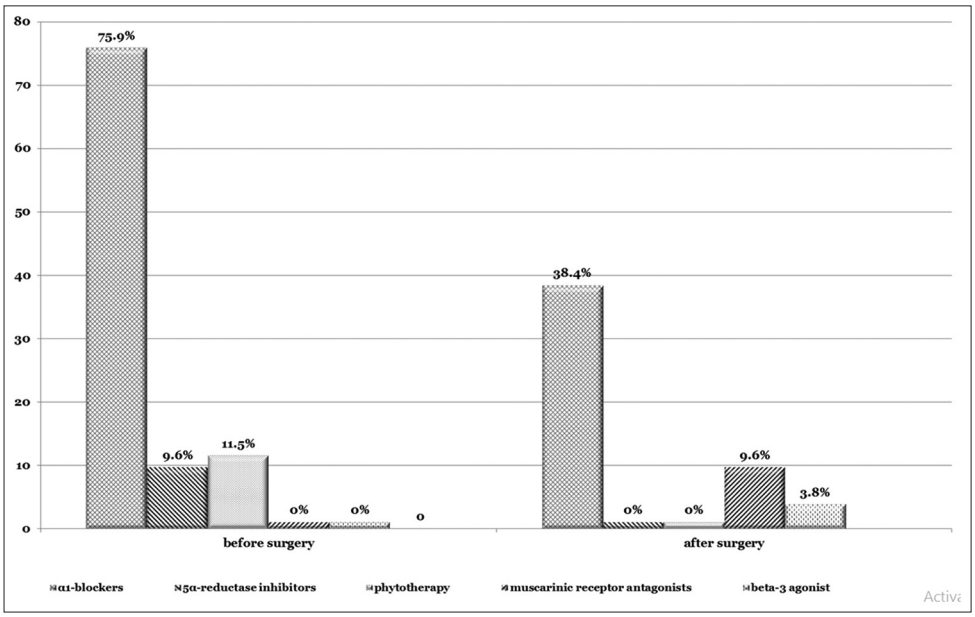


**Figure 7:** Medication dynamics in pre- and post-operative period.

## DISCUSSION

This group of patients has undergone a radical TUR of BPH, which is confirmed not only by the volume of the removed tissue according to the medical records but also by the results of post-operative ultrasound monitoring. However, this did not save our patients from LUTS, and IPSS survey revealed moderate and severe symptoms in 71.1% of the respondents [Figure 3]. A subjective evaluation of the results of the operation shows slightly better indicators, but the percentage of partial and complete dissatisfaction with the results is still 44.3% [Figure 4], which requires the prescription of pharmacological agents as monotherapy and combination treatment in 42.3% of patients. Similar results were obtained in other Russian analyzes.[9,10] We have not observed correlations between inflammatory changes and prostatic intraepithelial neoplasia and the frequency of recurrent LUTS.

We would like to focus on the fairly young age of patients who had such an indication as the ineffectiveness of conservative therapy on the one hand and the relatively small volume of the prostate on the other. In addition, attention is drawn to the short duration of drug therapy and the commitment to a single vector effect on LUTS, namely, alpha-1-adrenergic receptors.

A big problem, in our opinion, is the lack of an objective diagnosis of detrusor hyperactivity and sphincter state, which could limit the pool of even primary patients with indications for TUR for BPH. In our opinion, in this case, there was a reassessment of the severity of infravesical obstruction, which served as an indication for surgical treatment. This is also a reason for the high percentage of dissatisfaction with the results of TUR. A high percentage- 15.4% - of strictures of the urethra after TUR for BPH also troubles.

Preservation of LUTS after surgical treatment requires careful diagnosis, including the determination of the functional state of both detrusor and sphincter of the bladder, which most medical institutions cannot provide. Without such an approach, it is impossible to carry out a qualitative pathogenetic treatment of this group of patients, 42.3% of which (those under investigation) tend to the necessity of such therapy.

**Summary**

Young patients with a small volume of residual urine are quite a difficult group in terms of performing surgical treatment of BPH. TUR in this group of patients often does not relieve LUTS and requires further medication. The probability of developing urethral strictures after TUR adenoma is 15.4%. Conduction of functional diagnostics of the lower urinary tract will allow to narrow the indications for surgery of prostate adenoma, and in the post-operative period to choose rational approaches to treatment. The introduction of KUDI at least at the bases of the regional urological hospitals will outline ways to resolve this problem.

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