

CHRONIC KIDNEY DISEASE AND SURGICAL TREATMENT OF BENIGN PROSTATE HYPERPLASIA

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Resume: This article presents the results of surgical treatment of benign prostatic hyperplasia (BPH) by the method of transvesical adenomectomy. Tamponing of the removed adenoma bed, suturing of the bed, lowering the bladder neck and the use of a 10% infusion of lagochilus as a local hemostatic were used as methods of hemostasis in adenomectomy. The results of surgical treatment are presented depending on the presence or absence of chronic kidney disease (CKD) in patients. The influence of the hemostasis technique on the improvement of renal function in the postoperative period is shown.

Key words: chronic kidney disease, prostate adenomectomy, hemostasis.

Introduction. Benign prostatic hyperplasia (BPH) is a common urological disease of elderly males. According to the literature, it is found in 70% of men over seventy years and its frequency progressively increases with age [1,2,3,4]. Currently, only about 15% of patients suffering from BPH in the world undergo surgery, and 85-90% of patients receive drug treatment. Despite significant advances in modern conservative pharmacotherapy of BPH, the proportion of patients requiring surgical treatment is quite large. In Western European countries it reaches 30% [5,6,7].

Currently, the arsenal of various methods of surgical treatment of BPH is so large that among them there are even outpatient procedures or one-day procedures. In most cases, preference is given to transurethral techniques, such as transurethral resection of the prostate (TURP), laser enucleation of the prostate, etc. Traditional open prostate adenomectomy (OPAE): transvesical or retropubic remains the standard of tactics for BPH in some centers, especially in developing countries and in some developed countries, in particular, with large sizes of prostate hyperplasia [8,9,10].

Transvesical adenomectomy remains one of the most common methods of surgical treatment, which is explained by the low availability of modern technologies, ineffective medical examination and social factors. Therefore, continuing the search for improving its results remains relevant. Up to 30% of patients remain dissatisfied with the results of their operations. Complications after open adenomectomy occur in general from 8.8% to 25% [11,12].

Among all complications of OPAE, a significant proportion is made by kidneys and upper urinary tract (UUT) complications. The pathogenesis of changes in the kidneys and UUT in patients with BPH is complex and determined by many factors, such as age-related changes, concomitant urological and non-urological diseases affecting their functional ability, the development of obstructive uropathy, secondary pyelonephritis and their direct complication - chronic renal failure (CRF). A factor of fundamental importance in the pathogenesis of renal disorders in benign hyperplasia and significantly complicating the course of the disease should be considered a urinary tract infection. The development of chronic

pyelonephritis and CKD are among the most serious complications of benign hyperplasia. It is associated with disturbances in the urodynamics of the upper urinary tract and occurs in 50-89% of cases [11]. Some importance in the development of chronic pyelonephritis is attached to dyshormonal changes. This concept is based on the idea of BPH as a disease that develops against the background of dyshormonal disorders and estrogenization of the aging male body. It is indicated that the consequence of long-term exposure to endogenous estrogens, gestagens and glucocorticoids, characteristic of BPH, is inhibition of the contractility of the upper urinary tract and chronic urosthesis, against the background of which the picture of chronic pyelonephritis develops. At the same time, timely elimination of obstruction and restoration of normal urine passage contribute to the normalization of renal function in 80% of patients with BPH.

Chronic kidney disease (CKD) occupies a special place among chronic non-infectious diseases, since it is widespread, accompanied by a sharp deterioration in the quality of life, high mortality, and in the terminal stage leads to the need for expensive methods of replacement therapy - dialysis and kidney transplantation [13]. Early clinical and laboratory signs of kidney damage often have a vague picture and do not cause the doctor's alertness, especially if we are talking about an elderly and senile patient. The initial symptoms of kidney disease are considered as "age-related norms".

In order to overcome these difficulties, the US National Kidney Foundation (NKF), with the participation of a large group of experts (K/DOQI Committee - Kidney Disease Outcomes Quality Initiative), including specialists in the field of nephrology, epidemiology, clinical laboratory diagnostics, in 2002 The concept of chronic kidney disease was proposed and is now accepted throughout the world [14]. CKD is a supranosological concept that unites all patients with signs of kidney damage and/or decreased function, assessed by glomerular filtration rate, which persist for 3 months or more. Obstruction of the lower urinary tract, caused in particular by BPH, is a risk factor for the development of CKD. Inflammatory complications and progression of CKD in prostate adenoma occupy a leading place among the causes of deaths. It is relevant not only to identify and eliminate renal surgical complications after adenomectomy, but also to determine the stage of CKD and the risk of progressive decline in renal function.

Purpose of the study: to assess the incidence of CKD in patients undergoing prostate adenomectomy and study of its features depending on the method of hemostasis of the adenoma bed.

Materials and methods. We studied the results of surgical treatment of 102 patients with lower urinary tract symptoms caused by BPH. All patients underwent a comprehensive clinical, laboratory and instrumental examination. The patients were divided into 4 groups: 1st group - adenomectomy was performed with hemostasis by tamponing the bed of the removed adenoma (n=38), 2nd group - hemostasis by suturing the bed (n=20), 3rd group - hemostasis by lowering the cervix bladder (n=20) and group 4 - hemostasis was achieved using a 10% infusion of Lagochilus intoxicating as a local hemostatic (n=24). Chronic kidney disease stage was determined based on the K/DOQI (National Kidney Foundation Kidney Disease Outcomes Initiative) and KDIGO (Kidney Disease Global Outcomes Guidelines) diagnostic criteria for CKD, primarily by determining glomerular filtration rate based on CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration) equations.

Results. The diagnosis of CKD consisted of two components: signs of kidney damage and decreased GFR (Table 1).

Table 1. CKD depending on the state of kidney function and the presence of markers of damage.

GFR ml/min/1.73 m ²	Markers of kidney damage	
	Yes	No
≥ 90	CKD	Norm
60-89	CKD	Risk group
< 60	CKD	CKD

Results. Patients with CKD, in accordance with the diagnostic criteria listed above, were divided into stages as follows:

Stage I (signs of kidney damage with normal or increased GFR) – $GFR \geq 90 \text{ ml/min/1.73 m}^2$ + markers of kidney damage,

Stage II (kidney damage with an initial decrease in GFR) - $60\text{--}89 \text{ ml/min/1.73 m}^2$ + markers of renal damage,

Stage III (moderate decrease in GFR) - $30\text{--}60 \text{ ml/min/1.73 m}^2$,

Stage IIIA – $45\text{--}59 \text{ ml/min/1.73 m}^2$,

IIIB stage – $30\text{--}44 \text{ ml/min/1.73 m}^2$,

Stage IV – $15\text{--}29 \text{ ml/min/1.73 m}^2$,

Stage V – $<15 \text{ ml/min/1.73 m}^2$ or dialysis.

Among the entire cohort of patients, the distribution of CKD after prostate adenomectomy was as follows: stage I - 3 patients (2.9%), stage II - 17 (16.7%), stage IIIA - 8 (7.8%), stage IIIB - 2 (1.9%), stage IV - 2 (1.9%), stage V - 2 (1.9%). Distribution of the incidence of CKD by patient groups: tamponing the bed of a removed adenoma - 10 (9.8 %) patients with CKD of different stages, when suturing the bed - 5 (4.9 %), applying removable sutures - 13 (12.7 %), the use of lagochilus - 6 (5.9%). After determining the stage of CKD, the patient was prepared for surgical treatment. Appropriate recommendations aimed at improving renal function were followed both by the patient and by the attending physician and consultants (recommendations on lifestyle, diet, avoidance of nephrotoxic drugs).

Discussion. There is a certain point of view regarding the pathogenesis of almost all postoperative infectious and inflammatory complications of adenomectomy. Thus, with an open adenomectomy, a wound is created in the vesicourethral segment, which, after eliminating the compression of the excretory ducts of the prostate lobules, is irrigated with discharge from the prostate and maintains purulent inflammation of the adenoma bed. The purulent process in the bed causes secondary healing, delays the processes of scarring and epithelization, and is a source of generalization of infection along the urinary and genital tracts. The development of vesicoureteral, urethro-seminal, urethroprostatic reflux and generalization of infection occurs - urethritis, prostatitis, cystitis, pyelonephritis, vesiculitis, epididymo-orchitis, suppuration of a postoperative wound, osteitis of the pubic bones [1]. One of the leading causes of the development of chronic renal failure in patients with BPH is obstructive uropathy, which most often develops as a result of bilateral compression of the ureters by hyperplastic tissue (especially with subvesical growth of nodes) and/or compression of the ureteric orifices by a hypertrophied detrusor. In addition, impaired passage of urine from the urinary tract may be caused not only by a mechanical obstruction to the outflow of urine, but also by dynamic or functional obstruction of the ureters due to a disorder in their kinetics against the background of bladder dysfunction [15,16]. As a result of increased intrapelvic pressure and renal pelvic reflux, the hemodynamics of the kidney are significantly impaired with the subsequent development of structural changes in the intraorgan arteries in the form of their obliteration and diffuse stenosis. Hemodynamic disturbances lead to serious metabolic changes and severe ischemia of the renal tissue. Due to obstructive uropathy, there is an increasing deterioration in all indicators of the functional state of the kidneys. A characteristic feature of this process is the early impairment of the concentrating ability of the kidneys.

Treatment of patients with CKD should simultaneously be aimed at slowing the rate of progression of kidney dysfunction (renoprotection) and preventing the development and progression of cardiovascular

pathology (cardioprotection) in order to improve disease outcomes. The surgical treatment performed - transvesical adenomectomy and adherence to the recommendations led to an improvement in renal function in 3 to 6 months after surgery in 25 (73.5%) of 34 patients with impaired renal function. At the same time, in the shortest possible time, an improvement in renal function was observed in patients in whom hemostasis of the adenoma bed was carried out by using an infusion of Lagochilus intoxicant as a hemostatic, as well as for hemostasis by suturing the adenoma bed.

Conclusion. Determining the stage of CKD after prostate adenomectomy allows for timely implementation of measures aimed at improving kidney function and preventing the progression of CKD. The period of improvement in renal function was the shortest with hemostasis after adenomectomy by suturing the adenoma bed and when using Lagochilus intoxicant infusion as a local hemostatic.

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