



**SPECIFICITY OF PERFORMING KIDNEY TRANSPLANTATION AFTER
CHRONIC KIDNEY DISEASE.**

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Abstract

Kidney transplantation is one of the first disciplines of transplant medicine to be established clinically as the standard of care for patients with end-stage renal disease. The significant advantages of kidney transplantation over hemodialysis in terms of life expectancy and quality, as well as in economic terms, make it the method of choice, especially in relatively young patients. Indications for kidney transplantation are determined jointly by a transplant surgeon and a nephrologist or urologist (or / and a pediatrician). These patients are usually chronic dialysis patients.

Keywords: Kidney transplantation, patients, donor, hemodialysis, vesicoureteral anastomosis, immunosuppression.

Over the past decades, great strides have been made in the field of kidney transplantation. This was facilitated by the improvement of the technique of collecting the donor kidney, the careful selection of the appropriate donor, and the solution of a number of technical aspects of transplantation. Improving the effectiveness of treatment of patients with end-stage chronic renal failure (CRF) is largely due to the introduction of physiological direction into clinical practice with an in-depth study of the structural and functional state of the kidneys and urinary tract [1]. At the same time, urological complications after kidney transplantation are still one of the main reasons for the deterioration of the results of operations [7, 8]. As a rule, from the moment of the onset of hemodialysis, the functional activity of



the urinary tract is significantly reduced or completely absent. As shown by the research of N. Treivish in 1991, 79.5% of patients have persistent oligoanuria, daily urine output is on average 50100 ml. The number of acts of spontaneous urination does not exceed twice a day. Dystrophic processes develop in the wall of the bladder, due to the fact that in most of them it does not function for a long time. This is also facilitated by changes caused by the CRF itself [10, 11]. In addition, long-term glucocorticoid therapy, which patients undergo, leads to massive desquamation of the urothelium, pronounced stromal edema in the bladder wall, and in the preserved epithelium - to the emergence of a large number of vacuoles [2]. Perlin D.V. [13] noted that the occurrence of most urological complications is associated with the peculiarities of the blood supply to the graft ureter, as well as the morphological and physiological characteristics of the bladder wall after prolonged anuria against the background of uremia and immunosuppression. Thus, the need for urological examination of patients preparing for kidney transplantation is obvious. Any violation of the passage of urine, including those associated with functional insufficiency of the lower urinary tract, is a predisposing factor for the occurrence of an inflammatory process in the transplanted kidney and may underlie the failure of transplantation. Timely diagnosis and correction of urodynamic disorders is the main preventive measure to prevent the development of pyelonephritis in the graft [3]. According to the well-known multicenter studies of F. Debruyne [15], which included the results of 4787 kidney transplants, urological complications were observed in almost 10% of recipients, but their true number may be greater [16]. Urological complications after kidney transplantation are up to 7-20%. Urological complications of kidney transplantation are still the cause of unfortunate transplant losses, and sometimes even death of patients. The method of kidney transplantation into the iliac region with the formation of ureterocystoanastomosis has become a generally accepted method, which made it possible to reduce the total number of urological complications from 15-20% to 7-12%. In the process of kidney transplantation, general urology widely recommends various methods of urinary tract anastomoses, Leadbetter and Politano, E. Anderson, F. Debruyne, etc. leading to insolvency. The use of immunosuppressive drugs that promote engraftment of the graft is often accompanied by the development of a vesicoureteral anastomosis failure, serious infectious complications, and the almost complete suppression of the body's defenses creates favorable conditions for the generalization of foci of



infection up to the development of sepsis. The incidence of complications is often determined not only by the methods of restoring the urinary tract, but also by the peculiarities of organ removal operations. Of great importance is the most careful relationship with the vessels supplying the ureter, because ureteral ischemia remains one of the unsolved problems of kidney transplantation, which often leads to necrosis of its distal section and anastomotic failure.

Urological complications in kidney transplantation include: urinary leaks and fistulas; obstructive complications; reflux in the graft; infectious and inflammatory complications. All these complications are associated with the functional and histological state of the graft ureter tissue, the recipient's bladder wall tissue, and the initial bacteriological status in the urinary tract.

All of the above complications can develop already in the early postoperative period, which are also provoked against the background of aggressive initial immunosuppression, which entails the addition of a wound infection. All this creates significant difficulties in treatment and is often accompanied by the loss of the graft, which is noted 2 times more often when complications occur in the first 3 weeks after kidney transplantation. The incidence of urinary fistula or leakage ranges from 1-17% [16]. The following main causes of occurrence can be distinguished: failure of the formed anastomosis between the urinary tract of the graft and the recipient; incompetence of the seams of the bladder wall (when using transvesical techniques of ureterocystoanastomosis); necrosis of the urinary tract graft. In the early postoperative period (the first week after kidney transplant), the most common urological complication is anastomotic leakage, which is observed in 0.5-13% of recipients and is more related to the method of its formation [17]. According to most researchers, from 60 to 80% of urinary fistulas and leaks after kidney transplantation are caused by ischemic necrosis of a part of the ureter and dystrophic changes in the walls of the bladder in the recipient [4]. In the fundamental work A. Shafik [3] showed that approximately 76% of people have a longitudinal variant of blood supply with the main vessels running parallel in the adventitia along the entire length of the ureter from its lateral, anterior and posterior sides, or a bilateral variant - with two main vessels passing from opposite sides of the ureter. In 24% of people there is a so-called loose type of arterial blood supply with segmental arteries, anastomosed with each other in the form of a plexus in the adventitia, from which the own vessels of the ureter emanate [5]. The development of ischemia can be facilitated by a



number of other factors [6], one of which may be excessive skeletonization of the ureter and hilum during organ removal or preparation during surgery, accompanied by damage to the main supply vessels and collaterals, as well as a long period of ischemia of donor kidney tissues during conservation ... F. Debruyne et al. [12] suggested that acute rejection may contribute to the development of ureteral necrosis as a result of a sharp decrease in blood flow. Other researchers [10] reported a greater likelihood of developing ureteral necrosis during organ transplantation from a living related donor, which is explained by the need for extensive dissection of tissues in the hilum area when removing one kidney compared to removing both kidneys en bloc.

Obstructive complications are a large and diverse group. According to most researchers, they are observed in 0.9-7.5% of recipients. A common type of obstruction is obstruction of the ureteral wall associated with sclerosis, which developed as a result of changes associated with the duration of conservation, cold and heat ischemia.

Unfortunately, a frequent urological complication in the post-transplant period is graft pyelonephritis, which, according to a number of authors, is observed in 50-100% of operated patients. The infection enters the transplanted kidney both by hematogenous route with inflammation in the own kidneys and other organs, and by urinogenic (ascending) - in the presence of drains, vesicoureteral reflux and an infected bladder. In the pathogenesis of graft pyelonephritis, in addition to hemodynamic disorders, urodynamic disorders play an important role. In this regard, N.A. Lopatkin et al. noted that the timely elimination of urodynamic disorders is the main preventive measure to prevent inflammation in the transplanted kidney.

Currently, up to 30,000 kidney transplants are performed annually in the world. However, the waiting list grows much faster than the number of transactions. Often this is due to the return to dialysis of previously operated patients due to transplantectomy due to various complications, including urological. Despite the significant improvement in treatment results over the past decade and a half, these complications still continue to be the cause of the annoying loss of transplants, and sometimes even the death of patients after kidney transplantation. Researchers dealing with this problem immediately faced serious difficulties, primarily due to the fact that many methods of diagnosis and treatment, widely used in urological practice, were unsuitable for patients after kidney transplantation. The inaccessibility



of the artifactual orifice of the ureter, aggressive initial immunosuppression, which significantly increases the risk of developing infectious complications, the reparative capacity of tissues significantly weakened by uremia - this is not a complete list of obstacles that transplantologists and urologists have to face.

In this regard, an in-depth study and a thorough study of the state of the urinary tract of recipients with chronic renal failure in the terminal stage and of the donor is necessary, including not only conventional clinical studies, but also determination of the state and viability of the ureter of the donor kidney in the process of conservation using pathomorphological research methods, study morphological structure of the recipient's urinary tract, the use of endoscopic minimally invasive diagnostic methods.

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