

Astana Medical University

SUMMARY

Of the dissertation work of T.A.Kurmanov on the topic: "The role of kidney autotransplantation in the reconstruction of extensive ureteral defects of various origins", submitted for the degree of Doctor of Philosophy (PhD) in the specialty 8D10102- "Medicine"

Research relevance.

Restoration of the patency of the upper urinary tract in case of extensive injuries and strictures of the ureters remains one of the most difficult problems of surgical urology [1, 2]. Significant ureteral defects are formed as a result of iatrogenic injuries during operations on the pelvic and abdominal organs, after the use of radiation therapy, as well as due to such diseases as urolithiasis, tuberculosis, schistosomiasis, bilharziasis, retroperitoneal fibrosis [1, 3]. The expansion of indications for radical surgery for malignant neoplasms, the introduction of endoscopic and endovideosurgical methods of treatment into practice has led to an increase in the number of patients with extended strictures [4, 5]. The impossibility of restoring the patency of the upper urinary tract through the use of unchanged tissues of the urinary tract often inclines the urologist to perform nephrectomy or dooms the patient to an existence with permanent urinary drains [2, 6]. In this category of patients, complete or partial replacement of the ureters is indicated, if necessary, using a hollow organ or heterotopic autotransplantation of the kidney.

According to the literature data, attempts to replace the ureter with synthetic materials [9, 10], vascular autografts, free lyophilized arteries, fallopian tubes [11], lyophilized dura mater [12], sections of the mucous membrane from the inner surface of the cheek with autoveins and preserved venous grafts [13], grafts from the submucosa of the small intestine [14], have not been successful so far. The use of all these materials and tissues does not hold promise for permanent ureteral replacement, as they are not capable of peristalsis like the ureter, and their inclusion in the urinary tract invariably leads to hydronephrosis. As a result of a long journey traveled by experimenters and clinicians in search of an organ to replace the ureter, the small intestine, which is closest to the ureter in wall structure and capable of contractile activity, was recognized as such [5, 15]. But however, there are a number of complications that ultimately lead to nephrosclerosis.

The main direction of the "Strategic Plan of the Ministry of Health of the Republic of Kazakhstan for 2017 - 2021" is to improve the health of citizens. One aspect is to improve the efficiency of the healthcare system by developing new methods of diagnosis and treatment, especially for patients with chronic renal failure and extensive ureteral strictures. Based on the Code of the Republic of Kazakhstan "On the health of the people and the healthcare system" dated June 24, 2021 No. 52-VII, almost all patients with CRF and extended ureteral strictures have nephrostomy, which subsequently leads to kidney shrinkage and ends with nephrectomy.

Kidney autotransplantation (KA) is a highly effective surgical intervention for the treatment of complex urological conditions.[7] The use of KA in the treatment of various complex urological diseases, such as extensive injuries of the ureter, complex nephrolithiasis, lumbar pain syndrome, renovascular diseases (stenosing lesions of the distal renal arteries, intrarenal aneurysms and arteriovenous malformations), tumors of the kidneys and ureters, as well as retroperitoneal fibrosis, even in rare and unusual critical situations showed high efficiency [8]. The advantage of KA is the preservation of the function of the organ, which is extremely important for the functioning of the human body. In addition, it is an alternative to well-known methods such as Boari flap plasty and ureterocystoanastomosis.

The purpose of research: To determine and implement the choice of the optimal technique for the reconstruction of the ureters with extended strictures of various origins.

Object and subject of research:

The present work is based on the results of clinical observations of 34 patients with ureteral strictures, who were in the conditions of the National Research Center of Oncology and Transplantology of the Corporate Fund "University Medical Center", Astana for the period from September 2019 to August 2022.

Research tasks:

1. To study the immediate and long-term results of reconstructive surgical interventions for various types of ureteral strictures.
2. Conduct a comparative analysis with the results of kidney autotransplantation for ureteral strictures of various origins.
3. Determine the indications and contraindications for the use of kidney autotransplantation for various types of ureteral strictures.
4. To develop and introduce into clinical practice a method of kidney autotransplantation for ureteral strictures of various origins.

Research methods:

1. Laboratory research methods (complete blood count, urinalysis, biochemical tests - creatinine, urea, glomerular filtration rate).
2. Radiation research methods (ultrasound of the kidneys, antegrade pyelography, multislice computed tomography).
3. Biostatistical research methods (statistical methods, Microsoft Excel 2013).
4. Data analysis was performed using STATA 14.1 (Stata Corp, College Station, TX, USA). To assess the relationship between the type of operation and complications, the Pearson X-square test was used, where p-value <0.05 was considered statistically significant.

Scientific innovation:

1. For the first time in the Republic of Kazakhstan, indications and contraindications for kidney autotransplantation have been determined.
2. A method has been developed for correcting extensive ureteral defects of various origins using kidney autotransplantation.

3. The results of the use of kidney autotransplantation for ureteral defects of various origins in the early and late postoperative period were studied.
4. In order to prevent infectious complications after kidney autotransplantation, a complex of local postoperative antibiotic therapy was proposed.

Practical significance:

1. The surgical tactics in the treatment of ureteral strictures has been determined.
2. The features of the technique of plastic replacement with a fragment of the small intestine with extensive strictures of the right and left ureter are shown.
3. Peculiarities of drainage of the upper urinary tract during the replacement of the defect of the ureter with a small intestinal fragment or appendicular process have been established.
4. The developed method of correction for extensive defects of the ureter of various origins using kidney autotransplantation indicates its high efficiency and should be used as a method of choice.
5. Clear indications and contraindications for choosing the method of kidney autotransplantation in case of extensive ureteral strictures have been determined.

The main provisions for defense:

1. Extended strictures of the ureter of various origins require the choice of surgical intervention to restore the passage of urine.
2. Replacement of the ureter stricture with a ileum segment or appendix can be used if there is a risk of urine infection with antibiotic-resistant microflora.
3. Kidney autotransplantation for extensive ureteral strictures should be performed if there is no risk of urinary infection with resistant flora.
4. Autotransplantation of the kidney is a physiologically sound operation that helps to restore the functional state of the kidney as a result of the passage of urine through the natural urinary tract.

Conclusions:

1. The study of the immediate and long-term results of reconstructive surgical interventions for extended strictures of various origins showed that during ureteroloplasty, 17.2% had early postoperative complications (bleeding, vesicoureteral reflux, enterostasis phenomena, an increase in the content of nitrogenous wastes). Long-term postoperative complications were observed in 14.8% of patients (exacerbation of pyelonephritis, terminal hydronephrosis, nephrosclerosis).
2. Kidney autotransplantation with extended ureteral strictures showed that in the early postoperative period, only 1 patient was diagnosed with vesicoureteral reflux, in the late postoperative period, stenosis and anastomotic stone were diagnosed in 1 patient.
3. Indications and contraindications for kidney autotransplantation with extended ureteral strictures must comply with the following conditions:
 - a) satisfactory condition of the renal and iliac vessels;
 - b) satisfactory blood supply in the altered part of the ureter above the stricture;

- c) sufficient length of the ureteral stump for the formation of ureterocystoanastomosis;
- d) the absence of cicatricial adhesions in the area of the external iliac vessels, which makes their identification difficult;
- e) the absence of flora resistant to antibiotics in the urine.

4. The use of AP for extensive strictures of the ureter of various origins showed that it is necessary to adhere to the solution of the issue of reconstructive intervention as early as possible, without leading to the development of hydronephrotic transformation of the kidney, early active surgical tactics in order to preserve the function of the organ.

5. The experience of introducing AP into clinical practice for extended ureteral strictures has shown that, according to the technique of execution, this operation is classified as complex and requires a multidisciplinary approach (participation of urologists, transplantologists, vascular surgeons, the use of special equipment and microsurgical instruments), and can be recommended in multidisciplinary medical institutions of the city / regional level.

Practical recommendations:

1. Extended strictures of the ureter of various origins require the use of tactics of early surgical intervention to choose a method for restoring the passage of urine through the natural urinary tract in order to prevent the development of purulent-septic complications.
2. Replacement of the stricture of the ureter with a segment of the ileum or appendicular process can be used if there is a risk of infection of the urine with antibiotic-resistant microflora, as well as there are no conditions for performing kidney autotransplantation.
3. The choice of the type of surgical intervention by the AP method should correspond to the proposed indications (the condition of the renal and iliac vessels, the safety of the blood supply to the ureter above the stricture, the sufficient length of the ureteral stump, the absence of cicatricial adhesions, the absence of antibiotic-resistant flora in the urine).
4. The developed method for correcting extensive ureteral defects of various origins using kidney autotransplantation can be recommended for use in multidisciplinary medical institutions.

Approbation of work:

The dissertation work was tested at an extended meeting of the Department of Urology and Andrology and the Department of Surgical Diseases with courses in angioplasty and plastic surgery (Minutes No. 10 dated June 24, 2022).

The main results of the research and the provisions of the dissertation were reported in the speeches:

1. Experience in the correction of post-radiation stricture of the ureter by the appendix of the intestine: a clinical case of oncology and radiology of Kazakhstan, No. 1 (63) 2022, doi: 10.52532/2521-6414-2022-1-63-51-55 p.51-55

2. Surgical corrections of long ureteral defects (initial experience) journal of clinical medicine of Kazakhstan, 2022, volume 19, issue 4, <https://doi.org/10.23950/jcmk/12336> pp. 64-68

3. Kidney autotransplantation as a treatment for ureteral defects, 2022, no. 4, p. 82-85 <https://dx.doi.org/10.18565/urolgy.2022.4.82-85>

4. Kidney transplantation from a living donor: 7 years of experience, Valeology No. 2, 2018, Pp. 13-16 Astana, Kazakhstan

5. Kidney autotransplantation with extended ureteral strictures, Valeology No. 2, 2018, Pp. 17-19 Astana, Kazakhstan

6. Appendicular plastic of the ureter, Valeology No. 2, 2018, Pp. 120-122 Astana, Kazakhstan

7. Options for restoring the functionality of the ureters, Valeology No. 2, 2017, P. 192-197 Astana, Kazakhstan

8. Primary vaginal stone associated with vesicovaginal fistula: A case report, Urology Case Reports Volume 40, January 2022, <https://doi.org/10.1016/j.eucr.2021.101917>

9. The use of an intestinal graft to replace extended ureteral defects. Journal of Hepato-Gastroenterological Research No. 2 (1), 2021, p.

10. Certificates of entering information into the state register of rights to objects protected by copyright dated February 03, 2023, No. 32235, dated February 06, 2023, No. 32362.

Publications:

Based on the materials of the study, 4 articles were published: two articles was published in the «Urology journal» and «Urology Case Reports», which has the 25th percentile (Q4) according to CiteScore in the Scopus database, 6 articles in peer-reviewed domestic publications recommended by the Committee for Quality Assurance in Science and Education of the Ministry of Education and Science of the Republic of Kazakhstan. Also published 1 publication in the materials of international scientific and practical conferences.

Personal contribution of the dissertation student:

The author personally participated in the creation of a plan for the diagnosis and treatment of patients with extended ureteral strictures. In addition, he independently performed surgical treatment of these categories of patients. Assisted in the removal of a kidney during autotransplantation, as well as on the "Back-table". The author conducted a daily inspection. The researcher made a personal contribution to the formulation of the goal, objectives and research program, the collection and processing of primary material, the development of the main provisions of the dissertation and conclusions.

Scope of structure and dissertation:

The dissertation materials are presented on 84 pages of typewritten text and include an introduction, a literature review, a description of materials and research methods, 4 chapters, conclusions, conclusions, practical recommendations, a list of references

155, of which 66 are domestic and 89 are foreign sources. The work is illustrated with 6 tables and 32 figures.