Urological complications after kidney transplantation

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Abstract

Introduction. Urological complications can affect the outcome of kidney transplantations by increasing the morbidity and mortality, including the lost of the graft [1]. The aims of this study were to determine the incidence of urological complications occurring after renal transplantation in our centre.

Materials and Methods. A series of 198 consecutive renal transplantations were performed between 1st of October 2007 and 31st of September 2009 at Institute of Uronephrology and Renal Transplantation Fundeni, Bucharest, Romania. Renal grafts were obtained in 123 cases (62.12%) from living-related and in 75 cases (37.88%) from cadaveric donors. Data were obtained from the patients clinical files about the prevalence of urological complications and their management. In all the cases we performed a Lich-Gregoire ureteroneocystostomy (UNCS) with minimal bladder wall dissection.

Results. The overall incidence of urological complications was 8.58%. Diagnosis was established using clinical, laboratory and imaging methods. Ureteral leakage and ureteral stricture located at the ureterovesical anastomosis are the most common urological complication after renal transplantation. There was no graft loss or mortality in our study.

Conclusions. Urological complications related to leakage or stenosis can be treated minimally invasive by ureteral stent insertion or by surgical vesicoureteral re-anastomosis. Graft survival after successful treatment was similar for all the patients in our study.

Key words: renal transplant, urological complications

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Introduction

Urological complications after renal transplantation increases graft and patient morbidity. Since the first successful kidney transplantation, despite improvements in diagnosis, treatment and prevention, incidence of urological complications remains high and represents the second major adverse event after vascular complications of the renal graft [2]. Urinary leakage and ureteral stricture are the most common complications. The aims of this retrospective study were to determine the incidence of urological complications occurring after renal transplantation in our centre, and how can it be reduced.

Materials and Methods

In the period between October 2007 and September 2009 we performed 198 renal transplants. Renal grafts were obtained in 123 cases (62.12%) from living-related and in 75 cases (37.88%) from cadaveric donors. Data were obtained from the patients clinical files about the prevalence of urological complications and their management. The follow-up of these patients ranged from 12 to 36 months, with none lost to follow-up. In 173 (87.4%) cases transplantation was carried out into the right iliac fossa, and only 25 (12.6%) cases in left iliac fossa. In all the cases we performed a Lich-Gregoire ureteroneocystostomy (UNCS) with minimal bladder wall dissection. A double J ureteral stent was occasionally placed. Indwelling Foley catheters were removed seven to nine days post transplant and ureteral stents cystoscopically at six weeks post transplantation.

Ureteral leakage was the second major urological complication (four cases). Double pigtail ureteral stent insertion was performed in two cases (50%), one vesicoureteral re-anastomosis (25%) and one ureteropyelostomy (25%).

Table I. Urological Complications after Renal Transplantation and Methods of Their Treatment

<table>
<thead>
<tr>
<th>Complication (no.)</th>
<th>Method of treatment (no.)</th>
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| Ureteral stenosis (7) | Double pigtail ureteral stent insertion (3)  
Vesicoureteral re-anastomosis (4) |
| Ureteral fistulas (4) | Double pigtail ureteral stent insertion (2)  
Vesicoureteral re-anastomosis (1)  
Ureteropyelostomy (1) |
| Lymphoceles (3) | Percutaneous drainage (1)  
Open surgical peritoneal fenestration (2) |
| Lower urinary tract obstruction (2) | Transurethral resection prostatectomy (1)  
Internal urethrotomy (1) |
| Ureteral clot obstruction (1) | Clot removal, double pigtail ureteral stent insertion (1) |

Peri-graft collection with extramural obstruction of the ureter was diagnosed by ultrasonography in three cases. Percutaneous drainage was successful in one case (33.3%) and open surgical peritoneal fenestration was performed in the other two cases (66.7%) to solve
the problem.

Two patients developed lower urinary tract obstruction, resolved by transurethral resection prostatectomy in one case (50%) and internal urethrotomy in the other.

In the case of ureteral clot obstruction, a double pigtail ureteral stent insertion after endourological clot removal was successful.

The graft survival was similar among patients who presented urological complications compared to all patients without any complication over the follow-up period.

Discussion

In this series of 198 consecutive transplants the incidence of urological complications was 8.58% with a large prevalence of ureteral stenosis (3.53%). It is important that most of these complications occurred within one month of transplantation so early diagnosis and treatment will help maintain graft function. The most common complications in our study were ureteral stenosis and urethral fistulas. Technical considerations are of most importance for these complications [1,2,3]: poor techniques of organ retrieval and ureteric reimplantation, ureteric ischemia particularly at the lower end. Great care should be taken during retrieval and bench preparation of the kidney to preserve the arterial ureteric supply [1,4,5]. In all the cases we performed a Lich-Gregoire ureteroneocystotomy (UNCS) with minimal bladder wall dissection. Insertion of a double pigtail can be performed in selected cases, although we have not observed significantly different rates of urological complications.

Routine ligation of all lymphatic vessels during receptor dissection of the iliac vessels lowers the lymphocele formation [2,4,6] (1.5%). Patients with perirenal collections not associated with dilatation of the collecting system, pain, fever, or an unexplained decline in renal function were excluded from the study. In asymptomatic cases we recommend primarily treatment by percutaneous insertion of a drainage catheter for non-infected fluid collections and open surgical drainage with peritoneal fenestration in all other cases.

The percentage of hematuria is very low in early postoperative period with no need for routine bladder irrigation.

Symptoms in patients with lower urinary tract obstruction occur usually after transplantation because most of them pass little or no urine previously. The incidence of bladder outlet obstruction was 1.01% in our data. There for it is no necessary to evaluate the lower urinary tract of asymptomatic patients before transplantation [1]. We performed transurethral resection of the prostate in one case and internal urethrotomy in the other.

Conclusions

Urological complications related to leakage or stenosis can be treated minimally invasive by ureteral stent insertion or by surgical vesicoureteral re-anastomosis.

Adequate technique of organ retrieval and ureteric reimplantation minimizes the complications rate.

Routine ligation of all the lymphatic vessels reduces the lymphocele formation.

Early diagnosis and treatment will help maintain renal graft function.

References


Rezumat

Introducere. Complicațiile urologice pot afecta rezultatele transplantului renal prin creșterea morbidității, mortalității, putând duce inclusiv la pierderea grefonului renal. Obiectivul acestui studiu a fost determinarea incidenței complicațiilor urologice în centrul nostru.

Material și metodă. O serie de 198 de transplanturi renale consecutive au fost efectuate între 1 octombrie 2007 și 31 septembrie 2009 în Institutul de Uronefrologie și Transplant Renal Fundeni, București, România. Grefările au fost efectuate în 123 de cazuri (62,12%) de la donatori în viață și în 75 de cazuri (37,88%) de la donatori în moarte cerebrală. Datele privitoare la incidența complicațiilor urologice și gestionarea acestora au fost obținute retrospectiv analizând fișele clinice ale pacienților. În toate cazurile analizate, ureteroneocistostomiile efectuate au fost tip Lich-Gregoire (UCNS) cu disecție minimă a peretelui vezicii urinare.

Rezultate. Incidența globală a complicațiilor urologice în perioada studiată a fost de 8,58%. Diagnosticul acestora a fost stabilit pe criterii clinice, metode de laborator și imagistice. Structurile și fistulele ureterale situate la nivelul anastomozei ureterovezicale sunt cele mai frecvente complicații urologice după transplantul renal. Nu a existat nicio pierdere a grefei și mortalitatea în studiul nostru a fost zero.

Concluzii. Complicațiile urologice legate de fistule sau stenoze pot fi tratate minim invaziv prin introducerea unui stent ureteral autostatic sau chirurgical deschis prin reanastomozarea ureterului grefonului la vezica urinară. Supraviețuirea grefei a fost similară pentru toți pacienții din studiul nostru.

Cuvinte cheie: transplant renal, complicații urologice