Urological Complications after Kidney Retransplantation, a Single Center Experience

C. Baston, C. Gîngu, I. Gener, S.S. Guler Margaritis, A. Preda, B. Hâineală, Oana Moldoveanu, A. Dick, I. Sinescu

Center for Uro nephrology and Renal Transplantation, „Fundeni” Clinical Institute, Bucharest

Abstract

Introduction: Kidney transplantation is considered the “gold-standard” replacement therapy for patients with end stage renal disease because it offers a better quality of life and longer survival compared to dialysis. The rate of chronic graft loss is still considerable despite significant improvements in short and long term graft survival and patients may be suitable candidates for retransplantation. However, retransplantation is a high-risk procedure because of limited surgical options performed on highly sensitized patients, and higher rate of graft failure. The aim of this study was to evaluate urological complications of renal retransplantation in our center.

Materials and Methods: We evaluated retrospectively the outcomes of kidney retransplantation performed in our center between 1st of July 1997 and 31st of December 2014. A total of 1542 consecutive kidney transplantation were performed and 78 patients were candidates for a second transplant. Renal grafts were obtained in 34 cases (43.5%) from cadaveric and in 44 cases (56.5%) from living-related donors. Among these 78 cases of retransplantation, the most common identified causes of end-stage renal disease were chronic glomerulonephritis (30.7%), diabetic nephropathy (16.7%) and systemic lupus erythematosus (6.4%). In 20.5% of retransplanted cases (N=16) recipients were at high immunologic risk compared with 3.89% (N=60) from the first kidney transplantation group (p<.05). Receptor average age was 37.2±9.8 y. o. with a male to female ratio 1.51/1. Donors mean age 48.2±16.4 y. o. with a ratio 1.17/1.

Results: The overall incidence of urological complications in kidney retransplanted patients was 6.4% (five cases). Ureteral leakage was the most common complication recorded in three cases (3.8%), all in the first month postoperatively. Other urological complications identified in the retransplanted group were ureteral stenosis (one case - 1.3%) and lymphocele (one case - 1.3%). Conservative treatment (prolonged vesical catheterization) was successful in one case with a small anastomotic fistula. In the other cases of ureteral leakage and stenosis open surgery was needed, consisted in resection of the affected segment and stented ureterocystostomy. Lymphocele was successfully treated by US guided percutaneous drainage.

Conclusions: Urological complication rate for kidney retransplantation was acceptable and comparable with the first transplant group (p>.05). Although the number of patients retransplanted in our center was low, results from this study encourage us to consider retransplantation as the best choice for patients after previous graft failure.

Key words: kidney retransplantation, complication, renal transplant

Correspondence to: Dr. Constantin Gîngu
Center for Uro nephrology and Renal Transplantation, Fundeni Clinical Institute
Soseaua Fundeni nr. 258, sector 2, 022328, Bucharest
Tel./Fax: 021 300 75 70
E-mail: cgingu@gmail.com
Clinical studies

Introduction

Kidney transplantation is considered the “gold-standard” replacement therapy for patients with end stage renal disease because it offers a better quality of life and longer survival compared to dialysis (1). Patients receiving renal grafts can expect a benefit of more than ten years (2). A large number of transplanted patients require retransplantation because of chronic graft failure. The rate of chronic graft loss is still considerable despite significant improvements in short and long-term graft survival and patients may be suitable candidates for retransplantation. With the loss of the graft function, patients return to dialysis and some of them are relisted for a second procedure. However, retransplantation is a high-risk procedure because of limited surgical options in subjects with previous multiple operations and sometimes on highly sensitized patients, with higher rate of incidents and graft failure (3). The aim of this study was to evaluate urological complications of renal retransplantation in our center.

Materials and Methods

Study design

This is a single-center retrospective cohort study using prospectively collected data.

All patients receiving a kidney graft in the Center of Urology and Renal Transplantation of “Fundeni” Clinical Institute between 1st of July 1997 and 31st of December 2013 were followed from transplantation till December 2014. Based on the database of our center we performed a retrospective analysis taking into account donor and recipient age, gender, cold and warm ischemia time, ureteroneocystostomy (UCNS) technique, use of stent and urological complications. A total of 1542 consecutive kidney transplantations were performed in this interval and 78 patients received a second renal transplant.

Minimal follow-up for each patient was 12 months which consisted in clinical examination, standard blood and urine tests, ultrasonography (US) and when necessary other imaging studies (computed tomography urography - CTU and magnetic resonance imaging- MRI). The urological complications were assessed by using clinical exams, laboratory values and imaging tools as stated above. Renal graft was placed extraperitonealy in the iliac fossa. Ureteroneocystostomy was performed after kidney revascularization using Leadbetter-Politano (L-P) transvesical technique and Lich-Gregoir (L-G) extravesical technique. In our retrospective analysis, L-P technique was mainly use until 2007 and L-G technique after that period. The L-P technique consists in performing a sub mucosal bladder tunnel in order to prevent reflux and then anastomosing the graft ureter to the mucosa with separate sutures. On the other hand, L-G is an extravesical technique that involves first incision of the detrusor muscle and afterward a continuous anastomosis between transplant ureter and bladder mucosa. The detrusor was closed with separate sutures to create an antireflux mechanism. Drainage catheter of the bladder was usually kept for 6 to 8 days after surgery. Ureteral stent (Cook Medical 6 to 8 Fr) was used only in selected cases and kept in place usually for a two weeks period.

Statistical analyses

Continuous variables are presented as mean or median and 95% confidence intervals, according to their distribution, and categorical variables as percentages.

Group comparisons were performed with Student’s t-test, $\chi^2$ test and Mann-Whitney U test, as appropriate.

A $p\leq 0.05$ was considered statistically significant.

Analyse-it (Analyse-it Software, Ltd., Leeds, UK) and SPSS (SPSS Inc., Chicago, IL, USA) software were used to analyze the data.

Results

Between July 1997 and December 2014, we performed 1542 consecutive renal transplants. In 1464 cases (94.95%), patients were at the first procedure and in 78 cases (5.05%) we performed the second renal transplant procedure. In all retransplanted cases we placed the kidney extraperitoneally in the contralateral iliac fossa.

Renal grafts were obtained in 34 cases (43.5%) from cadaveric and in 44 cases (56.5%) from living-related donors. Among these 78 cases of retransplantation, the most common identified causes of end-stage renal disease were chronic glomerulonephritis (30.7%), diabetic nephropathy (16.7%) and systemic lupus erythematosus (6.4%).

In 20.5% of retransplanted cases (N=16) recipients were at high immunologic risk compared with 3.89% (N=60) from the first kidney transplantation group ($p<.05$). Receiver average age was 37.2±9.8 y. o. with a male to female ratio 1.51/1. Donors mean age 48.2±16.4 y. o. with a ratio 1.17/1.

In the retransplanted group we recorded five com-
Complications (6.4%) compared to the other group of patients at the first transplant procedure were found urological complications in 99 cases (6.7%) with no statistical difference between the two groups (p>0.5). The most common complication in the second transplanted group (N=78) was ureter leakage (3.8% - 3 cases). After diagnosis, emergency treatment was initiated. Two cases required open surgical approach that consisted in resection of the affected ureteral segment and stented ureteroneocystostomy. In one case with small, marginal ureteral leakage, conservative treatment consisting in ureteral stenting and prolonged vesical drainage was successful.

Other complications were ureteral stenosis that occurred in one single case (1.3%) when open surgery was necessary (resection of the stenotic segment and reanastomosis protected by an autostatic stent), and lymphocele in one case (1.3%) treated successfully by ultrasound guided percutaneous drainage.

Ureteral leakage occurred within the first month after transplantation in all cases (early complication) whereas ureteral stenosis and lymphocele developed after this interval (late complications). The lymphocele occurred after two months after renal transplantation (1.3%) and the ureteral stenosis even later, after three months after transplant procedure (1.3%).

Compared to the retransplanted group, in the group of first transplanted patients we recorded urological complications in 99 cases (6.7%). The most common complications were ureteral stenosis (2.8% - 41 cases) and leakage (2% - 29 cases). Other urological complications in this group were lymphoceles (1.6% - 24 cases), hematoma with secondary ureteral obstruction (0.3% - 5 cases).

Analysis showed no statistical differences between the incidences of major urological complications in the retransplanted group compared to the first transplanted group of patients.

Discussions

According to the literature, urological complications after kidney transplantation represent an important cause of morbidity leading to graft dysfunction and graft loss (4, 5). There are many factors that can lead to urological complications regarding patient status and comorbidities, ischemia and technical errors (1-6).

In our study, the rate of urological complications after renal retransplantation was 6.4% (N=5), comparable with the literature. Our statistical analysis showed no difference in rate of urological complications between the retransplanted group and the other.

The results of this retrospective study indicate that the retransplantation offers a safe alternative for the transplanted patients after renal graft failure. Further more, there are various studies that show a survival benefit for retransplanted patients compared to those that remain on dialysis after graft failure (7). The overall survival benefit for the patient on dialysis performing renal transplant compared with those treated by dialysis alone has been demonstrated in several studies (7, 8). After graft loss and return to dialysis there is an increased mortality risk similar with the patients on the waiting list (9-12). Repeating renal transplantation after failure of primary allograft was associated with a significant reduction in mortality at five years in patients with type 1 diabetes mellitus and also in patients without diabetes (45% and 23% respectively), compared to patients remaining on the waiting list (13). These results were reported in a large series of more than 19 000 renal transplant recipients. When taking into account that patients with failed primary transplant comprise almost 30% of the current waiting list, there is a significant additional impact of the repeated renal transplantation upon general mortality from ESRD (14).

According to Meier-Kriesche et al. (12) marginal organs should not be used in cases of retransplantation because of the high mortality rates compared to the waiting list in this situation. After renal retransplantation of a non-marginal kidney the mortality rate of the patients is reduced by 53% (15).

Both in retransplantation and in primary renal transplantation, aggressive regimens of immunosuppression are used to prevent acute graft failure, but in order to balance the risk for infections and malignancies adjusted doses are recommended. Induction of immunosuppression should be performed with potent drugs in retransplantation and in primary transplantation as well. There is no data on the general combined risk of malignancies and severe infections after some series of potent immunosuppression drugs after retransplantation.

Koch et al., analyzing the risk factors for surgical complications in 405 kidney transplant patients treated with various immunosuppressive regimens, including mTOR, did not identify immunosuppression as risk factor for lymphoceles or ureter complications (16).

Major surgical complications are an important factor for the outcome in the cases of renal retransplantation (17).
Clinical studies

In case of retransplantation, transplantectomy is necessary only if inflammation signs occur or if retransplantation is planned on the same iliac fossa.

All cases of retransplantation should be carefully selected in terms of comorbidities, vascular profile, and immunologic status prior to operation, and have appropriate monitoring of renal function and regular surveillance for infection and malignancies after the procedure.

The number of patients with a previous renal transplantation joining the waitlist for a second transplant is increasing and we expect that retransplantation will certainly become more common in the future.

Conclusions

In our study, urological complications rate for kidney retransplantation was similar with the first transplant group. Although the number of retransplanted patient in our center was low mainly because of a large number of patients on dialysis being on the waiting list for the first transplant, results from this study encourage us to consider retransplantation as the best choice for the patients after previous graft failure.

Acknowledgment

This paper is supported by the Sectoral Operational Programme Human Resources Development (SOP HRD), financed from the European Social Fund and by the Romanian Government under the contract number POSDRU/159/1.5/S/137390”.

References