Surgical Complications in Live Related Kidney Transplant Patients at the Royal Medical Services: Review of the Last Three Years

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ABSTRACT

Objective: To determine the surgical complications in live related kidney transplant patients at the Royal Medical Services.

Methods: Over the period of three years from January 2008 through December 2010, all patients who underwent living related kidney transplant at Prince Hussein Bin Abdullah Urology Center at the Royal Medical Services were included in the study with a minimum follow up of 6 months for surgical complications.

Results: A total of 188 patients were included in the study. 11 patients were children and 63 were females. The frequency of surgical complications is 20.7%. General surgical complications were 4.25% that included deep vein thrombosis (1.06%), wound infection (1.06%), urinary tract infections (1.59%) and myocardial infarction (0.53%). The frequency of vascular complications was 12.2% including two cases of renal artery stenosis (1.06%), others included lymphocele (8.5%), hematomas (1.59%) and two cases of reopening for bleeding (1.06%). Urological complications frequency was 4.3%, three (1.59%) urethral strictures, three (1.59%) with lower ureteral stenosis and two (1.06%) with prolonged urine leak.

Conclusion: Kidney transplant is a viable treatment option for renal failure. Our results were compatible with the international figures. Prompt and early identification of the complication allows quick and proper management.

Key words: Complications, Kidney, Surgical, Transplant.

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Introduction

Chronic renal disease and dialysis lead to great burden on the society and health care services and cause huge distress to the patients and their families. Kidney transplant has lead to dramatic improvement in the quality of life in those patients and forms a safe and efficient treatment of the increasing number of dialysis patients.[1-4] Post renal transplant surgical complications include general, vascular and urological complications. Urological and vascular complications can be a cause of renal graft loss with high morbidity with increased hospitalization and cost and may even progress to patient mortality.[3-19] The kidney transplant program started in the Royal Medical Services in early 1972. Since then the program has progressed to include two live related kidney transplants per week, both adults and children.

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Table I: Demographic data of the study group

Total number of patients	188
Male : female (ratio)	125:63 (1.98:1)
Adult patients (%)	177 (93.2)
Pediatric patients (%)	11 (6.8)
Median age (range)	31.6 years (5- 63)
Total number of patients with complications	39 (20.7)

Table II: General surgical complications among the study group

Complication	**Number patients (frequency %)**
Deep vein thrombosis	2 (1.06)
Urinary tract infection	3 (1.59)
Wound infection	2 (1.06)
Myocardial infarction	1 (0.53)

Table III: Vascular complications among the study group

Complication	**Number patients (frequency %)**
Lymphocele	16 (8.5)
Renal artery stenosis	2 (1.06)
Perinephric hematoma	3 (1.59)
Uncontrolled bleeding /reopening	2 (1.06)

Table IV: Urologic complications among the study group

Complication	Number patients (frequency %)
Ureterovesical stenosis and lower ureteric stricture	3 (1.59)
Urethral strictures	3 (1.59)
Urine leak	2 (1.06)

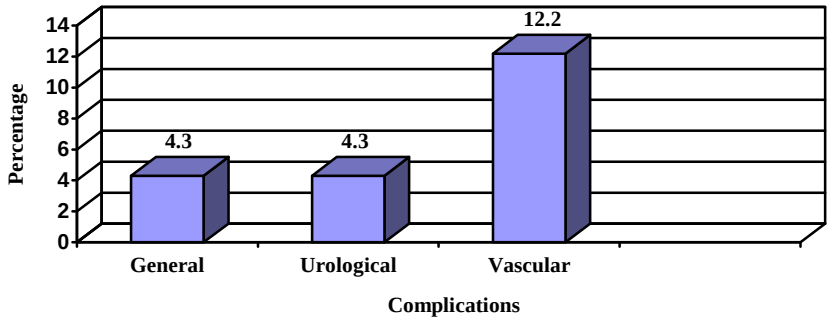

Fig. 1: Frequency of surgical complications

distress to the patient and his family. Kidney transplant has decreased the burden of these patients. We have been undergoing kidney transplant at the Royal Medical Services since 1972.

This study was conducted at Prince Hussein Bin Abdullah II Urology and Transplant Center at the Royal Medical Services to describe surgical complications in renal transplant patients over the last three years.

Methods

Over a period of three years from January 2008 through December 2010, all the patients who underwent living related kidney transplant at Prince Hussein Bin Abdullah II Urology and Transplant Center at the Royal Medical Services were included in the study. The urology surgeon harvests the kidney from the live related donor. The vascular surgeon does the vascular anastomosis in the recipient while the urologist reimplants the ureter. The patients were followed by a combined team of urologists, vascular surgeons and nephrologists. All the surgical complications that evolved through at least 6 months (6 -42 months) of follow up were documented and analyzed. The surgical complications were divided into vascular, urological and general surgical perioperative complications. The medical complications were not included in the study.

Results

Over the study period, 188 renal transplant patients who underwent live related donor kidney transplant at Prince Abdullah II Urology and Transplant Center at the Royal Medical Services were included in the study. There were 63 females and 125 males with a male to female ratio of 1.98: 1. One hundred and seventy-seven recipients were adults and 11 patients were children (6.8% of the cases). The median age of transplant recipients was 31.6 years ranging from 5-63 years. (Table I)

The patients were followed for at least 6 months post- renal transplant in the urology outpatient clinic during which all the surgical complications were documented and managed. The total number of patients who developed surgical complications was 39 patients (20.8%). (Fig. 1)

Eight patients (4.3%) developed general surgical complications; two patients (1.06%) developed Deep Vein Thrombosis (DVT), three patients (1.59%) had urinary tract infections in the immediate

postoperative period, two patients (1.06%) developed wound infection and one patient (0.53%) died from immediate postoperative myocardial infarction. (Table II).

Vascular complications involved 23 patients (12.2%); sixteen patients (8.5%) developed lymphocele none of which needed surgery, two patients (1.06%) had renal artery stenosis, three patients (1.59%) had small perinephric hematomas that were treated conservatively, and two patients (1.06%) required immediate reopening for bleeding. (Table III)

Urological complications were reported in eight patients (4.3%); three patients (1.59%) developed ureterovesical stenosis and lower ureteric stricture, three patients (1.59%) had urethral strictures and two patients (1.06%) developed prolonged urine leak that was treated conservatively. (Table IV)

Discussion

The best treatment option for end stage renal disease is kidney transplant, where it improves survival, quality of life and decrease the costs.[1-6,9,15,20-22] Despite all the advances in surgical techniques surgical complications still occur in transplant patients and cause significant morbidity and possible graft loss and even death.[1-22] The kidney transplant program in our center (Prince Hussein Bin Abdullah II Urology and Transplant Center) started in 2008, while it has started in the Royal Medical services in 1972. It has progressed and evolved over the years and now it is a well established program that includes two live related donor kidney transplantations per week. The program includes both adults and pediatric patients.

One hundred eighty-eight renal transplantations were performed in the center by different urology and vascular surgeons.

General surgical complications were seen in 4.3% of patients which presents eight patients. Two patients developed deep vein thrombosis. Both patients were treated with heparin infusion and started on warfarin until their INR exceeded 2.5. Oral anticoagulation treatment continued afterwards for at least 6 months. Three patients developed urinary tract infection in the early postoperative period. All three patients were treated with intravenous antibiotics and resolved without any sequel. While in some studies the rate of wound infection post renal transplant was 4.5%, in our series only 1.06% (two patients) was reported to have wound infection that was successfully treated with wound drainage, daily dressing and IV antibiotics.[23] One patient (0.53%) died from postoperative myocardial infarction.

Urological complications were seen in 8 patients representing 4.3% of the patients. The frequency of urological complications worldwide was variable depending on the surgeons' experience ranging from 2.5%-25% in different centers.[2,3,5,6,8-11,13,14,16-22,24-27] These complications included urinary leak, obstruction, ureterovesical reflux, ureteric stenosis, urinary fistula and others.[2,3,5,6,8-11,13,14,16-22,24-27]

The most common urologic complication noticed in our center was lower ureteric stricture and ureterovesical stenosis which occurred in three patients (1.59%). The frequency of lower ureteric stenosis and ureterovesical junction stenosis varied from 0.7%-3% in different centers.[3,5,6,8,10,11,16-18] In one patient significant improvement was achieved after balloon dilatation of the stenosis and stenting with a double J catheter for 4 weeks while the other two patients needed reimplantation of the ureter using boari flap. Both these methods were reported as acceptable methods of treatment in other studies.[3,5,6,8,10,11,16-18] Smooth postoperative course with normal kidney function test was described in all three patients.

Although urethral stricture post renal transplantation is not a well documented complication in the literature reviewed with an frequency 0.1%-0.26% it was reported in three of our male patients (1.59%).[13,19] Two patients needed repeated optical urethrotomy for multiple urethral strictures while one patient had a single recurrent bulbar stricture that was treated successfully with a memokath urethral stent.

Two patients (1.06%) had prolonged urine leak postoperatively despite a Double J catheter in situ, the site of leak was the ureterovesical anastomosis in both cases. Both cases were treated conservatively with Foleys catheter insertion and observation. The leak stopped in 10 days in one patient and 14 in the other patient. There was no need for any surgical intervention. The frequency of urine leak was recognized in the literature from 1.3% - 5.8% in different centers locating our results within a comparable range to other studies.[3,5,6,8-10,16,17,19,20]

Regarding vascular complications in our center, 23 patients were involved (12.2%). The frequency of vascular complications was similar to other centers where their frequency varied between 4.2%-27%.[3,4,9,15,20,28] In our study, the most common vascular complication was lymphocele seen in 16 patients (8.5%) compared to an frequency of 0.6%-18% mentioned in other studies.[2,3,9,20] All these patients were treated with conservative treatment; none needed surgical intervention or sclerotherapy.

Transplant renal artery stenosis was seen in two patients (1.06%) who presented with persistent hypertension diagnosed by Doppler ultrasound with a stenosis larger than 60% of the lumen diameter. Both patients were treated by percutaneous transluminal angioplasty with excellent results and resolution of their hypertension. The frequency of transplant renal artery stenosis ranged from 1%-27% in different series, depending on the surgeon's experience and technique of anastomosis.[2-4,9,15,20,28,29]

Perinephric hematoma was diagnosed postoperatively in three patients (1.59%) using ultrasound imaging. The hematomas were small and were treated conservatively with spontaneous resolution in the three patients. Perinephric hematomas are a common simple vascular complication post renal transplant reported occurring from 1.9%- 20.4%.[3,4,9,15]

Another vascular complication that we encountered was immediate postoperative uncontrolled bleeding necessitating reopening and exploration of the transplanted kidney. This was encountered in two patients (1.06%). In the first patient the bleeding source was a small vessel at the hilum of the transplanted kidney, while the other patient had a loose stitch at the arterial anastomosis. The bleeding was controlled in both patients with no adverse postoperative sequel. This complication is rarely mentioned in the literature reviewed, nevertheless was mentioned only in one study.[4]

We did not encounter any cases of transplanted renal artery or vein thrombosis or pseudoaneurysmal arterial dilatation.

Conclusion

Kidney transplant is an excellent treatment option for kidney failure. The renal transplant program in our center is a well established program and our results were compatible with the international worldwide figures. Prompt and early identification of the complication allows quick and proper management. More effort should be made to try to avoid such complications in the future.

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