

Postoperative Surgical Complications of Live Unrelated Renal Transplants for Patients of End Stage Renal Disease Needing Renal Replacement Therapy

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ABSTRACT

Objective: To evaluate the postoperative surgical complications of live unrelated renal transplantation (LURRT) done abroad for patients of end stage renal disease (ESRD) who needed renal replacement therapy (RRT) in an organ transplant centre.

Study Design: Descriptive, observational study.

Place and Duration of Study: Department of Renal Transplantation, Hamed Al-Essa Organ Transplant Center, Kuwait, from January 1993 to December 2015.

Methodology: This is descriptive and observational study in which data was retrospectively collected from medical records of the patients. All patients were selected who had been transplanted in various countries and admitted to this center for post-transplant care and follow-up in the period of 22 years and their surgical complications were noted. Data was analysed by SPSS 21. Nationalities and complications were noted and their percentages were calculated for the variables.

Results: A total of 423 patients (288 males (68%) and 135 females (31.9%), having mean age of 43 years) were transplanted in various countries. Most of these were Kuwaiti nationals (n=224, 53%). The post-transplant course was complicated by lymphocele in 25 (5.8%), ureteral stenosis in 22 (5.2%), urinary leak in 15 (3.5%), incisional hernia in 14 (3.3%) rare.

Conclusion: Due to inadequate living-related organ supply, many ESRD patients go to Third World countries for LURRT. Although, the risk of various complications is well established, this should be documented. Besides the ethical issues, overseas renal transplantation carries a high risk of unconventional complications.

Key Words: Live unrelated renal transplantation (LURRT), Surgical complications, End stage renal disease (ESRD).

INTRODUCTION

Renal transplantation is considered as a more desirable treatment option for patients who need renal replacement therapy (RRT) and is universally practised all around the world. There are various side effects of renal transplantation, but compared to dialysis, the survival of patients is comparatively better than the dialysis population.¹⁻³

According to World Health Organization (WHO), there are 91 countries where renal transplants are carried out. Around 66,000 kidney transplants, 21,000 liver transplants, and 6,000 heart transplants were performed globally in 2005. Although, transplantation offers the leading option for end stage renal disease (ESRD) patients, many of them do not have an opportunity for this type of treatment, mainly because of lack of organ supply.

The shortage of organs is virtually a universal problem. In some countries, the development of a deceased organ donation programme is delayed due to legal, sociocultural and other factors. The use of living donors for kidney and liver transplantation is also practised, but the purchase and sale of transplant organs from live donors are prohibited in many countries.⁴ The shortage of an indigenous supply of organs has led to the development of the international organ trade, where potential recipients travel abroad to obtain the organs. In western countries, deceased organ donation has reached to a steady state thus a number of ESRD patients on transplant are on the waiting list and the list is increasing progressively day-by-day.⁵

Many ESRD patients, who do not have availability of living related donors, opt for other donor sources, including LURRT and considered it as the final option. Besides this, since many patients cannot find appropriate unrelated donors in their own countries due to multiple reasons (social, ethical and legal), they travel to other countries, mostly Third World, for their transplant, which also means commercial or paid transplantation, which is not always ethical.⁶⁻¹⁰

In 1987, the 40th World Health Assembly, due to the increased trade of human organs, initiated the preparation of the first WHO Guiding Principles on

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Transplantation, endorsed by the Assembly in 1991 (in resolution WHA44.25). This led to the passing of different laws to stop this illegal trade around the world. After a consultation process, which took many years, the 63rd World Health Assembly adopted Resolution (WHA63.22) on 21 May 2010, updated WHO Guiding Principles and many areas were identified to progress and legalise donation and transplantation practices. In May 2008, the Transplantation Society (TTS) and International Society of Nephrology (ISN) passed "Declaration of Istanbul" on organ trafficking and transplant tourism. Because of this, too many organisations and institutions around the world endorsed it.

However, despite these developments, unethical transplantation like LURRT is an ongoing process and transplant physicians and surgeons are frequently facing the problem of treating these renal transplant patients and their complications. Issues of renal transplantation can be classified as medical or surgical. Surgical complications involve vascular and urological complications, lymphocele, wound infection and herniation.

The aim of this study was to analyse the trends of renal transplants done abroad and their immediate or mid-term postoperative surgical complications.

METHODOLOGY

This is a descriptive and observational study, Ethical approval was obtained from Hospital Reviewing Board of the Hamed Al-Essa Organ Transplant Center, Kuwait and carried out in the Department of Renal Transplantation from January 1993 to December 2015.

The Inclusion criteria involved all those patients who had been transplanted in various countries and admitted to our center for post-transplant care and follow-up in the period of 22 years. Renal transplants done in Kuwait during this period were excluded from the study.

A total of 423 patients were transplanted in various countries. These patients had different nationalities but 224 (53%) of them were Kuwaiti nationals and had been dialysed in Kuwait, who traveled to multiple countries on their own initiative and returned after transplantation, while most of the patients were admitted to our clinic within the first four weeks after the transplantation.

The variables of the study were their original nationalities and countries where they went for their renal transplant and their early and late postoperative surgical complications.

Information about transplant operation arrangements, costs and hospital facilities were supplied by the patients. The preoperative clinical findings and laboratory results were obtained from the data provided by the patients.

Patients presenting with uneventful post-transplant clinical course and normal kidney function with stable clinical and laboratory findings were followed at the outpatient clinic; whereas, those with medical and / or surgical complications were hospitalised.

After the arrival of each patient at the center, blood chemistry, urinalysis, creatinine clearance, electrocardiography, chest X-ray, plasma cyclosporine level, drainage fluid (if present) examinations, sputum and urine cultures, serological tests concerning cytomegalovirus, hepatitis B, C, herpes simplex, human immunodeficiency viruses (HIV), and thick and thin blood film examinations for plasmodia were carried out. Additionally, the scintigraphic and ultrasonographic examinations of the allograft, and percutaneous transplant biopsies were performed as needed. The data were collected retrospectively from patients' records and their surgical complications were noted.

Data were analysed using the Software Package for the Social Sciences (SPSS) version 21. Descriptive analysis of qualitative variables were described in the form of frequencies and percentages, while continuous variables were presented in terms of mean \pm standard deviation of normally distributed data.

RESULTS

Of the total 423 patients, there were 288 (68%) males and 135 (31.9%) females. The mean age was 42.9 \pm 13.008 (range 9 to 76) years. Out of these, highest number were done in Egypt 174 (41%), followed by Pakistan 112 (26.5%), India 55 (13%) and Iran 27 (6.4%), respectively (Table I).

Most of them were Kuwaiti nationals (n=224, 53%). Rest included 85 (20%) Egyptians and 32 (7.4%) were Indians (Table II).

Table I: Various countries where live unrelated renal transplants occurred.

Country	n	Percentage
Egypt	174	41%
Pakistan	112	25.8%
India	55	12.7%
Iran	27	6.2%
Syria	17	3.9%
Philippine	14	3.2%
Iraq	9	2.1%
Sri Lanka	3	0.7%
USA	3	0.7%
Jordan	2	0.5%
Saudi Arabia	2	0.5%
Lebanon	1	0.2%
England	1	0.2%
Bahrain	1	0.2%
Thailand	1	0.2%
France	1	0.2%
Total	423	100

Surgical complications included lymphocele in 25 (5.8%), ureteral stenosis in 22 (5.1%), urinary leak in 15 (3.5%), and incisional hernia in 14 (3.2%); as shown and other rare complication (Table III).

Table II: The nationalities of renal transplant recipients.

Country	n	Percentage
Kuwait	224	53%
Egypt	85	19.6%
India	32	7.4%
Pakistan	21	4.8%
Saudi Arabia	16	3.7%
Iran	15	3.5%
Syria	10	2.3%
Afghanistan	3	0.7%
Jordan	2	0.5%
Philippine	2	0.5%
Sri Lanka	2	0.5%
Sudan	2	0.5%
Lebanon	2	0.5%
Palestine	2	0.5%
Bahrain	1	0.2%
Bangladesh	1	0.2%
Congo	1	0.2%
Yemen	1	0.2%
Italy	1	0.2%
Total	423	100

Table III: Postoperative surgical complications of transplanted patients.

Postoperative complications	n	(%)
Lymphocele	25	5.8%
Ureteral stenosis	22	5.1%
Urinary leak	15	3.5%
Incisional hernia	14	3.2%
Wound infection	12	2.8%
Renal artery stenosis	6	1.4%
Graft thrombosis	6	1.4%
Perigraft collection	4	0.9%
Wound dehiscence	4	0.9%
Ureteric injury	3	0.7%
Pseudoaneurysm	2	0.5%
DVT	1	0.2%
Postoperative hematoma	1	0.2%
Intraoperative bleeding	1	0.2%

UTI = Urinary tract infection; DVT = Deep vein thrombosis.

DISCUSSION

As compared to dialysis therapy, renal transplantation has noteworthy advantages,¹ in financial and psychological terms; but due to the shortfall of live-related donor availability, it has led to global increase in commercial transplantation programmes where recipients who need RRT, opt for LURRT and, therefore, they have to face several difficulties in terms of surgical and medical problems.^{11,12}

This series highlights few areas of concern about renal transplants which were done outside Kuwait in various countries. Some previous studies showed that in these types of transplants, early postoperative mortality was

high, while other studies also described high rate of late postoperative mortality.¹³ The one-year survival rate of overseas LURRT's may be between 80 - 90%, compared with greater than 95% for Australian living-donor transplants.¹⁴ The early survival rate was better in this study and only 7 (1.6%) patients expired due to various complications.

In case of surgical complications, in early transplant period, most patients have to undergo reoperation, which subsequently affects the graft survival. In this analysis, the authors found rate of surgical complications was high (26.8%). In contrary to this, other studies showed a complication rate of 12.7% and 15.9%, respectively.^{15,16}

Many times, the cause of the complications was not found, but to reduce the complications rate, the authors have to meet the accepted criteria of transplantation practice. Chugh and Jha⁷ from India reported that some of these LURRT were performed by inexperienced clinicians in their private clinics, which lacked the most basic hygienic facilities.

In regard to our surgical complications, we found lymphocele in around 6% of the cases, which was treated surgically in most of the patients. Lymphoceles occur during the dissection process by opening the lymphatics. In most patients, these fluid collections are asymptomatic and are found on ultrasound examination not requiring any invasive treatment. Larger collections may be associated with dilation of the collecting system, pain, fever, and declined renal function. In these cases, ultrasound-guided aspiration should be done. Study done in Mexico showed a rate of lymphocele as 1%.¹⁵ In this series, ureteral stenosis was found in 22 (5.2%) patients. It was managed by ureteric reimplant in most of the cases. Contrary to this study, work done by Berger, Diamond and Sandhu and Patel showed ureteral obstruction at a rate of 2-10%.^{17,18}

Another common vascular complication is renal artery stenosis, which occurs in 3-23% of all transplants in the first 12 months.¹⁹ This rate is associated with the end-to-end anastomosis and cadaveric donor grafts. This complication should be entertained because if left unnoticed, it subsequently causes worsening of graft function and causes hypertension afterwards.²⁰ Renal artery stenosis in 6 (1.4%) patients which were treated by percutaneous transluminal angioplasty with stent placement. Chronic complications included incisional hernia in 14 (3.3%) cases which were repaired with mesh.

Universally, the incidence of arterial thrombosis is 0.3-6.1%.²¹ It is a disastrous complication and is most common in the first two weeks of transplantation, with 80% occurring in the first month and 93% in the first year.²² After the first month, thrombosis of the renal artery occurs mainly because of rejection or a high

degree of stenosis. Graft thrombosis in 6 (1.3%) patients, of whom 3 patients required graft nephrectomies.

Different investigators have different presumptions, some assume that most of the issues related to renal transplant are due to unsound donors and their imperfect hygienic conditions which further lead to wound infection, which was observed in 2.8% of the patients in our study, comparable to a study done by Reyna *et al.*¹⁵

The most important area of concern is that when patients come back after renal transplantation for further management; there is a communication gap between the primary transplant team and the unit caring for the patients in Kuwait.

So with all these hurdles, for patients considering commercial LURRT, detailed knowledge should be given to these patients about the side effects profile and risk of graft loss; and if they decide to proceed with commercial transplantation, they should specifically ensure adequate documentation and communication of the transplant team who did the transplant with the future medical and surgical team so that early complications should be addressed and treated promptly.

CONCLUSION

Here single institution experience was described with LURRT done outside Kuwait, and the surgical complications associated with those transplants were highlighted. It was found that there were several issues with commercial transplantations, which should be addressed.

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