

Surgical complications of renal trasplant in the Hospital of Clinicas of San Lorenzo, Paraguay since 2010 to 2023

Complicaciones del trasplante renal en el Hospital de Clínicas de San Lorenzo, Paraguay del 2010 al 2023

Lourdes Griselda Scholz Mendoza* , Fanny Cecilia Mora Avalos* , Tania Magali Ojeda Ozuna* ,
Leonardo Ojeda** , Jorge Ruiz Diaz***

Universidad Nacional de Asunción, Hospital de Clinicas, San Lorenzo, Paraguay

ABSTRACT

Introduction: Kidney transplant is the definitive treatment for patients with end-stage chronic renal failure, for whom it provides a better quality of life, being more effective and efficient than dialysis. It is less costly to society. The objective was to identify the most frequent immediate complications after kidney transplant at the Hospital de Clínicas from 2010 to 2023. **Methodology:** A retrospective, cross-sectional, descriptive observational study with non-probability convenience sampling. A total of 110 patient records from the Hospital de Clínicas archive were studied, focusing on post-operative renal transplant patients from the Hospital de Clínicas between 2010 and 2023. **Results:** 6.3% of patients experienced complications after surgery. The most common type of complication was vascular (57%). Urological complications accounted for 21.5%. Additionally, 21.5% of patients had surgical site bleeding, of which 50% required reoperation, without the bleeding site being identified during surgery. **Conclusion:** Complications showed a frequency of 6.3%. Vascular complications were the most common, followed by urological ones. A higher incidence of complications was observed in donors of cadaveric origin.

Keywords: Kidney transplant, complications, chronic kidney failure.

RESUMEN

Introducción: El trasplante renal es el tratamiento definitivo de los enfermos con insuficiencia renal crónica terminal, a los que proporciona una mejor calidad de vida, siendo más eficaz y eficiente que la diálisis, y menos costoso para la sociedad. El objetivo fue identificar las complicaciones inmediatas más frecuentes post trasplante renal en el Hospital de Clínicas desde el año 2010 al 2023. **Metodología:** Estudio observacional descriptivo de corte transversal, retrospectivo, con muestreo no probabilístico, por conveniencia. Se estudiaron 110 fichas del archivo del Hospital de Clínicas de pacientes post-operados de trasplante renal del Hospital de Clínicas desde el año 2010 al 2023. **Resultados:** El 6.3% presentaron complicaciones posteriores a la cirugía. El tipo de complicación más frecuente constituyeron las complicaciones vasculares (57%). Las complicaciones de etiología urológica representan el 21,5%. El 21,5% presentó sangrado de sitio quirúrgico, de los cuales el 50% requirió re intervención quirúrgica sin constatare sitio de sangrado durante la cirugía.

Conclusión: Las complicaciones mostraron una frecuencia de 6.3%. Las complicaciones vasculares fueron las más frecuentes, seguidas de las urológicas. Se constató mayor incidencia de complicaciones en donantes de origen cadavérico.

Palabras claves: Trasplante renal, complicaciones, insuficiencia renal crónica.

INTRODUCTION

Kidney transplantation is the definitive treatment for patients with end stage chronic renal failure, providing them with a better quality of life and being more effective and efficient than dialysis. Patients can return to an active working life, and economically, it is less costly for society. ⁽¹⁻³⁾

There is a shortage of organs in relation to the waiting list of potential recipients; therefore, it is essential that all potentially usable kidneys can be implanted under the best possible conditions. ⁽²⁾

In recent years, there has been significant progress regarding the technique used to perform transplants, resulting in lower morbidity and mortality, with improvements in graft survival rates. ⁽¹⁾

Complications, although mostly infrequent, are associated with high morbidity and mortality. Most can be avoided with precise and careful technique, as well as knowledge of the multiple situations that may arise during this type of transplant. The preferred approach must therefore be preventive. The development of complications requires extremely rapid action and early diagnosis, due to the serious consequences. ⁽²⁻³⁾

OBJETIVES

General: Identify the most frequent immediate complications after kidney transplantation at the Hospital de Clínicas from 2010 to 2023.

Specific:

- Determine the characteristics of patients who underwent kidney transplantation at the Hospital de Clínicas.
- Classify the surgical complications after kidney

* General Surgeon.

** Vascular Surgeon.


*** Vascular Surgeon. Chief of the Vascular Surgery Unit of the Second Chair of Clinical Surgery.

Corresponding author: Lourdes Scholz - E-mail: lourdesschoolzm@gmail.com - Address: Fernando de la Mora, Paraguay

Received: 17/10/2025 - Revised: 25/10/2025 - Accepted: 18/11/2025

Revisor: Carlos Arce Aranda MSP y BS

Editor: Eduardo González Miltos Universidad Nacional de Asunción; San Lorenzo, Paraguay

 This is an open access article published under a Creative Commons License

transplantation in the files studied.

- Distinguish the donor type according to cadaveric versus living related/unrelated origin.

MATERIAL AND METHOD

Observational, descriptive, retrospective, cross sectional study. The sample recruitment was carried out in a non probabilistic manner by convenience.

Inclusion criteria: Adult patients of both sexes, post operative kidney transplant recipients at the Hospital de Clínicas between January 2010 and December 2023.

Exclusion criteria: Incomplete records and/or those lacking legibility or that were lost. Patients hospitalized outside the study period.

Variables: age, sex, place of origin, donor type, associated pathology, and complications.

The collection and analysis of variables were carried out using Microsoft Office Excel® 2007. A descriptive analysis of the study population was performed, calculating percentages and frequencies.

All ethical principles were respected for the performance of this work.

RESULTS

During the study period, which spanned from 2010 to 2023, a total of 110 clinical files of post operative kidney transplant patients from the Hospital de Clínicas were examined. The age distribution ranged from 18 to 65 years, with a mean of 38 years. Most patients were male, accounting for 72%. The largest proportion of patients resided in the central area of the country, representing 58%, while 42% lived in the interior. Regarding donor type, 55% were cadaveric and 45% were living donors. Of the living donors, 81% had some degree of kinship with the patient. (Table 1)

Table 1: Characteristics of transplant patients (n: 110)

Characteristics	Category	Percentage	N
Sex	Female	28%	30
	Male	72%	79
Age	<20	2,70%	3
	20-29	29%	32
	30-39	22,70%	25
	40-49	21,00%	23
	50-59	19%	21
Doner	60-69	5,40%	6
	Alive	44,54%	49
Origin	Cadaveric	55,45%	61
	Central	58,00%	64
	Interior	42,00%	42

Regarding underlying pathologies, it was found that arterial hypertension (HTN) was the most frequent condition (60%). In second place, Chronic Kidney Disease of undetermined etiology accounted for 25%, and Type 2 Diabetes Mellitus (DM type 2) was present in 10% of cases. We observed Renal Polycystosis in 7%, Glomerulopathies in 3.6%, Hypothyroidism in 7%, diabetic nephropathy in 4%, and with lower prevalence, Type 1 Diabetes Mellitus in 1%, Anemia in 0.9%, hypertensive retinopathy in 1%, nephronophthisis in 1.8%. Among other pathologies were urethral stricture, benign prostatic hyperplasia, renal artery stenosis, vesicoureteral reflux, recurrent urinary tract infections, papillary thyroid carcinoma, tuberculosis, congestive heart

failure, renal lithiasis—all representing less than 1% of cases.

In terms of complications occurring after surgery, a total of 6.3% of patients presented complications (n = 7). The most frequent type were vascular complications, representing 60%, including arterial: thrombosis of the external iliac artery and the renal artery; venous: thrombosis of the renal vein; and hematoma. Urological complications accounted for 30% of the total, with one case of urethral stricture and one case of dehiscence of the uretero vesical anastomosis. In addition, one patient required surgical reintervention without identification of the bleeding site, and another presented hemorrhage at the operative wound associated with hematuria. Regarding infectious complications, one case of bacteremia of urinary origin was observed. (Table 2)

Table 2: Type of post-surgical complication (n: 10)

Types of complications (n:10)		
Vascular (60%)	Thrombosis of the external iliac artery	1
	Thrombosis of the renal artery	1
	Venous thrombosis	1
	Hematoma	1
Urologic (30%)	Surgical site hemorrhage	2
	Urethral stricture	1
	Dehiscence of the uretero vesical anastomosis	1
Infectious (10%)	Hematuria	1
	Bacteremia KPC + UTI	1

DISCUSSION

A total of 110 files of post operative kidney transplant patients from 2010 to 2023 were analyzed. The mean age of the recipients was 38 years, with a range of 18–65 years. The percentage of female patients was 28% and male patients 72%, in contrast to the study conducted at the University Clinical Hospital of Santiago de Compostela in the abdominal transplant unit (2005), where the recipients had a mean age of 47 years and an equal sex distribution. (3)

The comorbidities most frequently associated with chronic kidney disease are commonly arterial hypertension and type 2 diabetes mellitus, being respectively 60% and 10%, like other published studies regarding transplant complications in which 49.38% were found between both variables. (4)

End Stage Chronic Kidney Disease progresses irreversibly to deterioration of renal function, which leads to the need for transplantation. It is important to take into account the incidence of complications that may occur. We observed complications in 6.3% of patients, of which 60% were vascular. Vascular complications are rare, with an incidence of 3–4%. Venous thrombosis is more frequent than arterial thrombosis; in the study conducted we confirmed one case. They may be related to technical defects, hypercoagulability, or immunological phenomena. In a study carried out at the “Dr. Abelardo Buch López” Nephrology Institute (INNEF), 16% vascular complications were reported. (5-6)

In an Argentine study conducted regarding surgical complications, urological complications were the most frequent, with an incidence between 2.5–12.5%. In contrast, we observed one case of urethral stricture and one case of dehiscence of the uretero vesical anastomosis. (7)

In a retrospective study conducted in Guatemala, it was found that the survival of kidney grafts from living donors was

greater, although no determining factor was established. In another Argentine study, no significant differences were found between both groups, with the main causes of rejection being immunological factors and vascular thrombosis. In our work, 61% of donors were of cadaveric origin and 49% were living donors, of whom 81% had some degree of kinship. Of the complications observed, 57% originated from cadaveric donors. (7-8)

CONCLUSION

Kidney transplantation continues to be the best renal replacement therapy in terms of survival and quality of life. Its success depends on close monitoring to prevent complications, which are a true challenge due to their multifactorial nature. Our population is relatively younger, and regarding comorbidities such as arterial hypertension and type 2 diabetes mellitus, they were just as frequent as in other studies. Vascular complications, which were prevalent, and urological complications are usually related to technical aspects or to the pre existing condition of the recipient and the donated organ. Their early detection is fundamental to preserve the graft. Infections are an important cause of morbidity and mortality, making individualized monitoring and review of pertinent protocols necessary. The management of kidney transplant complications requires a comprehensive and multidisciplinary approach. Patient education, therapeutic adherence, and early detection of

complications have allowed improvement in patient survival; however, rigorous and personalized surveillance must be carried out.

CONFLICT OF INTERESTS

There is no conflict of interest; the study is not funded by any private or state company and was carried out with the authors' personal funds.

AUTHOR'S CONTRIBUTIONS

Lourdes Griselda Scholz Mendoza: Design of the research, in the critical review of its content as well as in the writing and approval of the final report of the version to be published.

Fanny Cecilia Mora Avalos: Participated in the information search, in the design of the research, in the data collection, and in the analysis of the results.

Tania Magali Ojeda Ozuna: Made important contributions to the idea and design of the study, to data collection, and to the analysis and interpretation of data.

Leonardo Ojeda: Data collection, analysis of the results, and in the critical review of its content as well as in the writing and approval of the final report.

Jorge Ruiz Diaz: Critical review of its content as well as in the writing and approval of the final report of the version to be published.

REFERENCES

1. Del Valle Sanz Y, Ma R, Ramos L, Frutos T, Arellano C, Lemos R, et al. Complicaciones vasculares en el trasplante renal pediátrico: diagnóstico ecográfico. *An Pediatr (Barc)*. 1999; 50. Disponible en: <https://www.aeped.es/sites/default/files/anales/50-3-10.pdf>
2. Julia P, Alsac JM, Fabiani JN. Complicaciones vasculares del trasplante renal. *EMC - Técnicas Quirúrgicas: Aparato Digestivo*. 2012; 12(1):1-17. Doi: 10.1016/s1634-7080(12)61505-5.
3. Pérez-Fentes DA, Blanco-Parra M, Toucedo-Caamaño V, Romero-Burgos R, Puñal-Rodríguez JA, Varo-Pérez E. Complicaciones quirúrgicas post-trasplante renal: estudio en 185 casos. *Actas Urol Esp*. 2005;29(6):578-86.
4. López Martínez JA, Borges AB, de Carlo MM, González AG, Flores VHP, Morales LE. Pérdida del injerto en trasplante renal: estudio comparativo donador vivo vs. cadavérico. *Rev Hosp Juárez Méx*. 2017;71(1):14-7.
5. Mesnard B, Karam G, Chelghaf I, Prudhomme T, Rigaud J, Branchereau J. Trasplante renal y complicaciones. *EMC-Urología*. 2024;56(1):1-14.
6. Rodríguez Martínez R, Bacallao Méndez R, Gutiérrez García F, Fonseca Hernández D. Complicaciones del trasplante renal en el Instituto de Nefrología. 2001-2005. *Rev Soc Esp Enferm Nefrol*. 2010;13(1):7-15.
7. Chamba Chamba BM, Bueno Castro AS. Complicaciones quirúrgicas del trasplante renal en adultos: revisión bibliográfica. *Salud ConCiencia*. 2023;2(2):e50. doi:10.55204/scc.v2i2.e50.
8. Nieto López RJ, Martínez Hidalgo AF. Sobrevida del paciente receptor de trasplante renal y del injerto renal proveniente de donador vivo y cadavérico. *Rev Cent Salud (USAC)*. 2013;