

Trasplante Renal: formación quirúrgica durante la residencia de urología en el Hospital de Clínicas, Montevideo, Uruguay

Renal Transplantation: Surgical training during the urology residency at Hospital de Clínicas, Montevideo, Uruguay

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Resumen: Objetivo: Describir la actividad quirúrgica correspondiente a la cirugía del receptor de un residente de urología durante la rotación de trasplante renal en el Hospital de Clínicas, Montevideo Uruguay, en el período abril 2023 a julio 2023. Materiales y métodos: Se realizó un estudio descriptivo. Las principales variables de interés son número de cirugías realizadas, tipo de reimplante ureteral y tiempo operatorio. Los datos fueron recabados del registro realizado en el programa de descripciones operatorias de la institución y analizados en Excel versión 2019. Resultados: En un período de cuatro meses, el residente realizó un total de 16 cirugías de receptor. Se realizaron sólo mediante dos técnicas quirúrgicas de reimplante ureteral; Lich-Gregoir y Taguchi. En la totalidad de las intervenciones el residente tuvo el rol de cirujano. En un 25% (n=4) de las intervenciones se realizó la técnica Lich-Gregoir y en un 75% (n=12) la técnica Taguchi. La media del tiempo operatorio fue de 95.12 minutos con un desvío estándar de 23.42 minutos en general. Conclusión: La rotación por trasplante renal durante la formación del residente de urología en Uruguay le permite adquirir destrezas quirúrgicas, no sólo aplicables en la cirugía de trasplante renal. Durante la rotación por trasplante renal, el residente de urología en Uruguay alcanza a realizar el 10% de los implantes ureterales sugerido por la Asociación Española de Urología (AEU) para su formación. El manejo multidisciplinario de los pacientes en conjunto a cirugía vascular y nefrología es fundamental en la formación del residente.

Palabras clave: trasplante renal, Lich-Gregoir, Taguchi, residencia de urología.

Abstract: Objective: To describe the surgical activity corresponding to the recipient's surgery made by an urology resident during the kidney transplant rotation at Hospital de Clínicas, Montevideo, Uruguay, from April 2023 to July 2023. Materials and methods: A descriptive study was carried out. The main variables of interest are number of surgeries performed, type of ureteral reimplantation, and surgery time. The data were collected from the record made in the institution's operative descriptions program and analyzed in Excel version 2019. Results: In a four-month period, the resident performed a total of 16 recipient surgeries. Only two ureteral reimplantation surgical techniques were performed; Lich-Gregoir and Taguchi. In all the interventions, the resident had the role of surgeon. In 25% (n=4) of the interventions the Lich-Gregoir technique was performed and in 75% (n=12) the Taguchi technique. The average surgery time was 95.12 minutes with a standard deviation of 23.42 minutes in general. Conclusion: Rotation for kidney transplantation during the training of urology residents in Uruguay allows them to acquire surgical skills, not only applicable in kidney transplant surgery. During rotation for kidney transplantation, urology residents in Uruguay manage to perform 10% of the ureteral

implants suggested by the Spanish Association of Urology (AEU) for their training. The multidisciplinary management of patients in conjunction with vascular surgery and nephrology is essential in resident training.

Keywords: kidney transplant, Lich-Gregoir, Taguchi, urology residency.

1. Introduction

Renal transplantation is the replacement treatment of choice worldwide for patients with end-stage chronic renal failure. Its cost is high but lower than that of maintaining the patient on chronic hemodialysis, and compensated by the improvement in quality of life by dispensing with dialysis dependence, while increasing the patient's long-term survival (1). Kidney transplantation is one of the great advances in modern medicine and has been described as "the miracle of the 20th century" (2). This is a pioneer discipline in solid organ transplants and the interaction that occurs in it between the transplant surgeon and the nephrologist served as a model of medical care by multidisciplinary teams (3).

In Uruguay, the first kidney transplants date back to 1969 and were performed at the Hospital de Clínicas Dr. Manuel Quintela, Montevideo. In the first years the activity was sporadic; the first two were performed with a cadaveric donor and the next two with a living donor (4). In 1981, a cadaveric donor kidney transplant program was implemented, making the activity more regular and growing, predominantly cadaveric donor transplantation, which is maintained to the present. This change was produced by the occurrence of various events; the existence of a national law that regulates the activity (led by Prof. Dr. Raúl Rodríguez Barrios, achieving the approval of Law 14005 (Organ and Tissue Transplant Law) in 1971, regulated in 1977); the creation of the National Bank of Organs and Tissues (BNOT, 1978) with its Histocompatibility laboratory and the creation of the National Resources Fund that pays for, among other medical acts, dialysis and kidney transplantation (4). Within a necessarily multidisciplinary team, the urologist plays an important role in the following aspects: preoperative urological assessment of the recipient (and of the donor in *intervivo* surgery), surgery of the living and cadaveric donor, surgery of the recipient (ureteral reimplantation), postoperative follow-up, management of complications and remote follow-up.

The training of specialists in Urology in Uruguay depends on the Chair of Urology that is located in the Hospital de Clínicas. During the second year of their training, the resident must comply with the specific kidney transplant rotation. The objective of this rotation is to acquire theoretical knowledge related to renal transplantation in its pre-transplant assessment, surgical techniques, acute and remote complications (5). Rotation for kidney transplantation is performed at the Hospital de Clínicas, one of the three Institutes of Highly Specialized Medicine (IMAE) in Uruguay. In total, in Uruguay, according to the preliminary report of the Global Observatory on Donation and Transplantation (GODT), in 2022, 150 kidney transplants were performed (6). The present work aims to describe the surgical activity corresponding to the surgery of the recipient of a urology resident during the renal transplant rotation at the Hospital de Clínicas, Montevideo Uruguay, from April 2023 to July 2023.

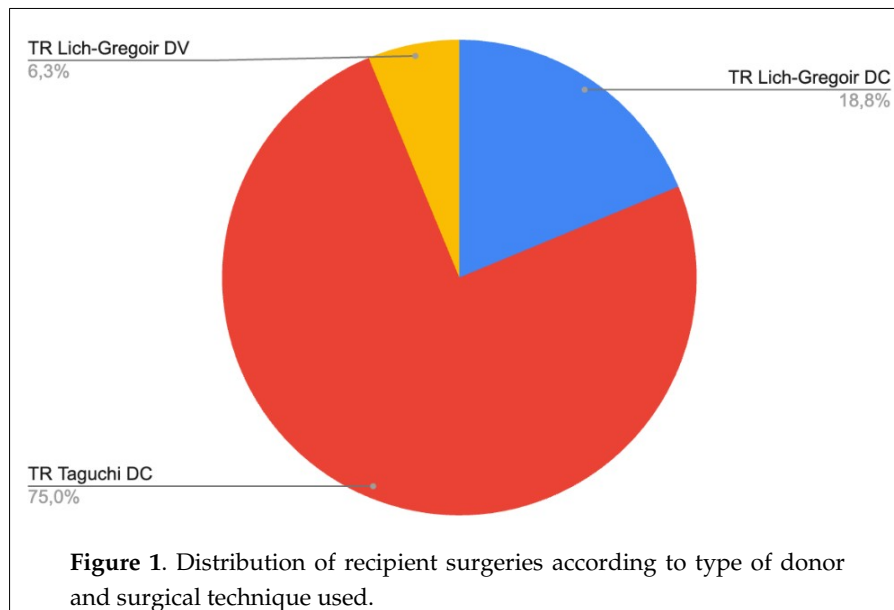
2. Methods

A descriptive study was carried out. The main variables of interest are the number of surgeries performed, type of ureteral reimplantation, and operating time of the recipient surgeries performed by the resident during his rotation for kidney transplantation. The operative time variable includes urological time and abdominal wall closure. The data was collected from the record made in the institution's operative descriptions program and in the resident's mandatory semester portfolio. The portfolio is a didactic and evaluation tool

that consists of recording the training activities carried out by the resident during his residency. The data was subsequently analyzed in Excel version 2019.

3. Results

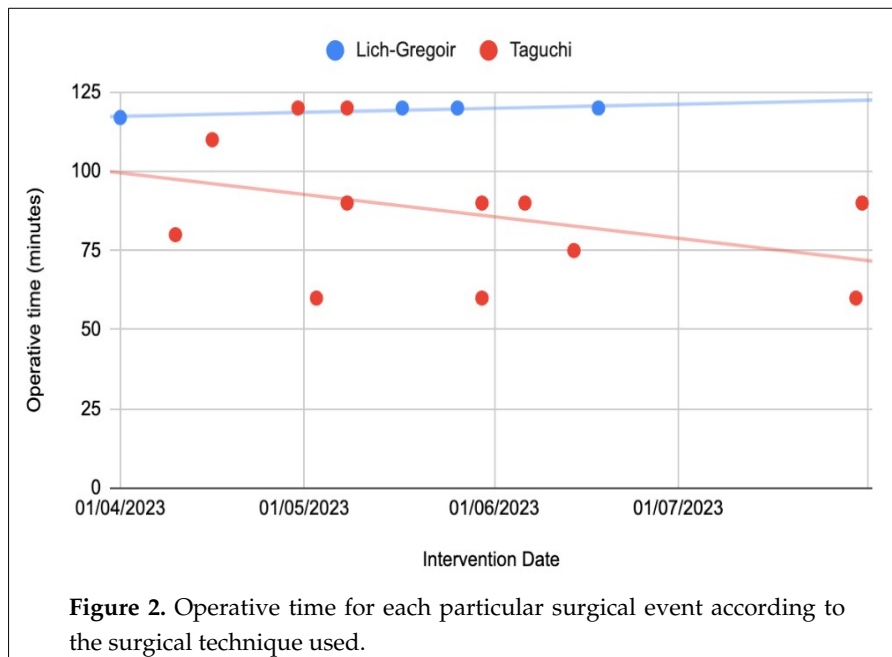
In a four-month period, the resident performed a total of 16 recipient surgeries, one of which was from a living donor. Only two ureteral reimplantation surgical techniques were performed; Lich-Gregoir and Taguchi. In all the interventions, the resident had the role of surgeon. In 25% (n=4) of the interventions the Lich-Gregoir technique was performed and in 75% (n=12) the Taguchi technique. Figure 1 shows its distribution, also considering whether it was a kidney transplant from a living donor (DV) or cadaveric donor (DC).



The average operating time was 95.12 minutes with a standard deviation of 23.42 minutes with a range of 60 - 120 minutes. If we consider the operating time for each surgical technique, when the ureteral reimplantation was performed according to the Taguchi technique, the mean operating time was 87.08 minutes and the standard deviation was 20.66 minutes with a range of 60 - 120 minutes. When the Lich Gregoir technique was performed it was 119.25 minutes and the standard deviation was 1.5 minutes with a range of 117 - 120 minutes. Figure 2 represents the operating time for each event depending on whether the Taguchi or Lich-Gregoir technique was performed during the four months of resident rotation for kidney transplantation.

4. Discussion

The first stage of surgery in kidney transplant surgery is vascular, in which the renal vein most often anastomoses with the external iliac vein and the renal artery at the end of the internal iliac artery or with the lateral aspect of the external iliac artery. . At the Hospital de Clínicas it is performed by a specialized vascular surgery team. The second stage of the surgery deals with the reconstruction of the urinary tract; It is performed by means of a ureteroneocystostomy, of which there are numerous techniques. Most surgeons prefer extravesical rather than transvesical access because it is faster, does not require a separate cystostomy, and requires a shorter ureteral length, thus ensuring blood supply to the distal ureter (3).



In the urology service of the Hospital de Clínicas, the two techniques used are extravesical; Lich-Gregoir and Taguchi. These techniques differ from each other in the way in which the ureter is anastomosed to the bladder, with the preparation of the ureter and bladder being the same for both techniques. In the first, the ureter is anastomosed by means of two mucosa-mucosa hemi-surgers and in the second, a single point of advancement is made from the ureter into the bladder, which requires less surgical skill. Given that the rotation for kidney transplantation is completed by the resident during his second year of residency, where the surgical volume is less (7), it is proposed as one of the hypotheses why the Taguchi technique is the most performed. In addition to the fact that most kidney transplants are from cadaveric donors, becoming an uncoordinated emergency surgery given the times of renal ischemia, being supervised by the urologist on duty; mostly non-subspecialist in kidney transplantation.

Figure 2 shows that the distribution of events corresponding to the Taguchi technique conforms to a function with a negative slope, which may suggest that the number of events performed allows the resident to acquire certain surgical skills that towards the end of the Rotation leads to a decrease in operating time for performing said technique. On the other hand, for the Lich-Gregoir technique, the slope of the data set is close to 0; It is hypothesized that the number of events for this technique are not enough for the resident to develop a skill such that it results in a decrease in the operating time for its performance.

It should be noted that the urology resident during the kidney transplant rotation performs 10.66% of the total kidney transplants performed in Uruguay annually. While in Spain, according to a study, the most common situation is for a resident to finish their training stage without having performed a complete transplant (8). In this work, 55% of the residents surveyed stated that they consider the training in kidney transplantation during the residency insufficient. On the other hand, another study carried out in Spain reports that the AEU sets the recommended percentage of renal implants at ≥ 10 in which internal resident physicians (MIR) must participate as the first surgeon, their series being below this value in surgery renal implant with 6.67% (9). While in Colombia, according to a study, 76.32% of residents consider that their training in kidney transplantation is insufficient, and the main barrier identified to increase training in kidney transplantation during residency was the non-availability of a formal rotation (10).

Although this paper describes the surgical activity of the resident during the kidney transplant rotation, particularly in the recipient's surgery, it is worth noting that the resident also participates in other training activities. As an assistant in the surgery of the donor and recipient in the intervivo transplant and in the event of the need for reimplantation in the case of complications, assisting the main urologist, in the pre-transplant assessment together with the nephrology team, in the follow-up of the postoperative periods in the hospitalization as well as; in the discussion in the modality of interdisciplinary athenaeum of complex transplant patients.

Regarding the evaluation of the resident's performance during the renal transplant rotation, it is mainly carried out through the feedback of the urologist professor. The instrument used is an evaluation rubric in which the teacher evaluates the performance as insufficient, sufficient and outstanding, in addition to making the comments that he considers pertinent in writing. This rubric is attached to the mandatory semester portfolio. In the surgical case, the performance is evaluated after the surgery is completed, while the clinical activity is evaluated by the teacher in charge and/or coordinator of the renal transplant unit. Clinical activity includes pre-renal transplant polyclinic, hospitalization room as well as the presentation of clinical cases in interdisciplinary athenaeums. The rubrics are attached to the portfolio, and once the semester is over, these evaluations are taken into account for final approval.

Regarding previous simulation practices, the resident has access to the service's training laboratory, where he performs the ureterovesical anastomosis in non-biological models. Although receiver surgery is open, the resident also accesses a bench or box trainer model. This device simulates an abdomen and has holes for the introduction of laparoscopic instruments and a camera with transmission to a front monitor. The resident can perform different exercises described in the training program with non-biological models, which allows the acquisition of basic surgical skills in laparoscopy and improvement of their fine motor skills that give them better surgical performance.

5. Conclusions

- Rotation for kidney transplant during the training of urology residents in Uruguay allows them to acquire surgical skills, not only applicable in kidney transplant surgery.
- During rotation for kidney transplantation, urology residents in Uruguay manage to perform 10% of the ureteral implants suggested by the AEU for their training.
- The multidisciplinary management of patients in conjunction with vascular surgery and nephrology is essential in resident training.

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