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Case report of cadaveric kidney transplantation with renal-portal venous drainage: A feasible way for a venous drainage in a complex generalized thrombosed vessels setting

Mauricio Millan (Abdominal Organ Transplant Surgery Fellow)[a],
Luis A. Caicedo (Abdominal Transplant Surgeon Assistant Professor of Surgery)[b],
Jorge I. Villegas (Abdominal Transplant Surgeon Assistant Professor of Surgery)[b],
Oscar Serrano (Abdominal Transplant Surgeon Assistant Professor of Surgery)[b],
Liliana Caicedo[a], Mauricio Duque (Abdominal Organ Transplant Surgery Fellow)[a],
Laura S. Thomas (M.D., Clinical Researcher)[c],
Gabriel J. Echeverri (M.D., Abdominal Transplant Surgeon Assistant Professor of Surgery)[b,*]

[a] ICESI University, Cali, Colombia
[b] Fundación Valle del Lili, CICAT (Centro para la Investitigacion en Cirugia Avanzada y Trasplantes), ICESI University, Cali, Colombia
[c] Fundación Valle del Lili, Calí, Colombia

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ABSTRACT

INTRODUCTION: One of the frequent complications suffered by patients with chronic renal failure is the lack of vascular access due to venous thrombosis. This means that the transplant surgeon must have a detailed knowledge of the intra-abdominal venous system, and other alternative surgeries, at the time of performing the renal graft implant, in order to ensure a good venous drainage.
PRESENTATION OF THE CASE: This article provides a case report regarding a patient with no vascular access and with surgical difficulties at the time of the kidney transplant, in whom a renal-portal venous drainage was performed with very good outcome.
DISCUSION: Renal-portal venous drainage is a way to performe kidney transplant with good outcome. In Fundación Valle del Lili we have overcome the lack of vascular access in patients that need a renal transplant by new surgical technics that improve the patients quality of life and survival.
CONCLUSION: We can conclude that new surgical alternatives exist for those patients with chronic renal failure that have no vascular access. These patients are a priority for kidney transplants and the surgeon must take in to account the need for a new surgical assessment.

1. Introduction

In order to manage their condition optimally, patients with terminal chronic renal failure require a kidney transplant, or other alternatives of renal replacement therapy as peritoneal dialysis or haemodialysis. For these options to be viable vascular access are necessary, which can be achieved through the creation of a peripheral venous arterial fistula or through central venous high-calibre catheters (permanent or temporary). Often these accesses are achieved through prosthetic materials that in several circumstances require multiple changes due to complications such as thrombosis or infection. Which, in turn, generate structural alterations of the venous system and can lead to the development of sclerosis and therefore later difficulties in ensuring a dialysis route [1].

Patients experiencing these type of difficulties are considered a priority in the waiting list for renal transplantation; there are technical challenges involved in ensuring the venous drainage of the renal graft when secondary vascular alterations arise in the areas of common deployment. It is necessary, therefore, to consider other, less frequently used, options that could be employed in order to overcome this difficulty. Such options include the inferior vena cava, the mesenteric veins, the vessels gonadal and portal vein, amongst others [6].

* Corresponding author at: Fundación Valle del Lili, CICAT (Centro para la Investitigacion en Cirugia Avanzada y Trasplantes), ICESI University, Carrera 98 # 18-49, Cali, Colombia.
E-mail addresses: gjechverri@icesi.edu.co, gjecheverri@hotmail.com (G.J. Echeverri).

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We presente the case of a patient with vascular access difficulties, who received renal transplantation from a cadaveric donor, and in whom it was necessary to ensure vascular drain through a non-conventional anastomosis towards the portal vein.

2. Case presentation

We evaluated a 11-year old female patient from Colombia in, with diagnosis of VACTERL association. Characterized by multiple congenital malformations such as anal atresia, cardiac and spine defects, anomalies in the extremities, hypoplasia and chronic kidney failure. The patient was in haemodialysis via a Mahurkar catheter in the right femoral vein. The femoral catheter was lost due to an obstruction, which required various new vascular accesses (femoral and iliac) causing multiple venous thrombosis. The interventional radiology group evaluated the patient and performed a cavography they inserted a translumbar catheter, which caused thrombosis and stenosis along the inferior vena cava. The translumbar catheter was changed, leaving it above the thrombosis in the inferior vena cava, as it was near the right atrium.

The pre-transplant protocol was initiated, by entering the patient on the waiting list, and the patient was given priority, due to the lack of vascular access.

3. Surgical technique

The kidney was recovered from a cadaveric donor. A medial laparotomy was performed supra- and infra-umbilical to the receptor, during which it was found that a large part of the abdomen was blocked by multiple intestinal adhesions with oedema of the small and large intestine. Mobilization was undertaken of the right colon and the second portion of the duodenum using the Cattell Braasch and the Kocher manoeuver. Also was perfomed the dissection of the abdominal infra-renal aorta and the inferior vena cava, across its whole length. Extensive thrombosis and severe fibrosis were observed in the inferior vena cava and, as such, it was necessary to locate the superior mesenteric vein in order to perform anastomosis of the renal vein, but it was impossible to do this due to the threadlike nature of the vein due to the thrombosis.

While the dissection of the hepatic portal vein it was found an extra-renal vein of good calibre and it was decided that the implant of the renal graft should be undertaken via an anastomosis at the lateral side of the renal vein to the portal vein with continuous running suture of 7–0 prolene (Fig. 1). The anastomosis of the renal artery was performed via the infra-renal abdominal aorta, forming a bridge of the graft using the donor iliac artery, resulting in an end-to-end anastomosis using continuous running suture of 7–0 prolene. Subsequently, the ureter was implanted to the intra-peritoneal bladder, with no complications during the surgical procedure. The abdomen was left open using a vacuum pack because of the bowel loops distension.

The patient was moved to the paediatric ICU for post-surgery handling, where she received initial immunosuppression with methylprednisolone and Mycophenolat-Mofetil and induction with thymoglobuline. The patient had a satisfactory clinical evolution with decreased creatinine levels and 48 h after the initial surgery, she was taken to surgery for the review of the cavity and the closure of the abdominal wall.

Later, the patient was moved to the ward, with medical management, during which time her renal function was normal with a creatinine level of 0.33 mg/dL. She was discharged with instructions to attend control appointment with the paediatric nephrologist.

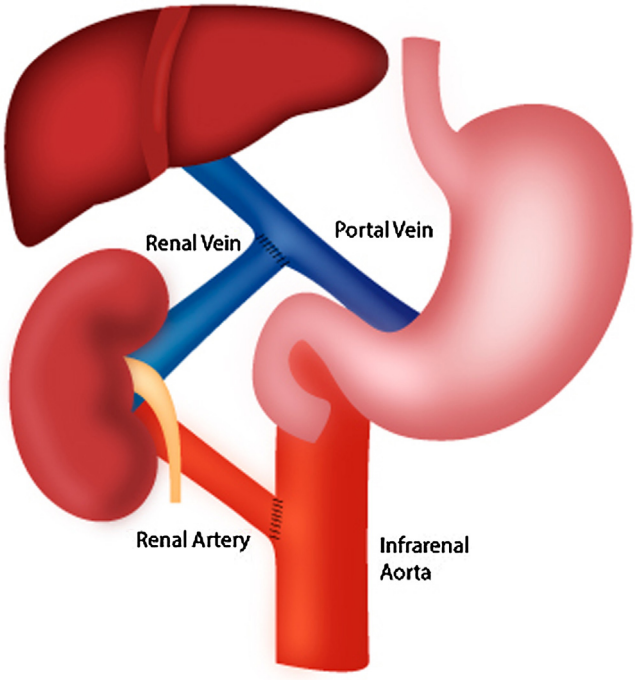

Fig. 1. XXX.

4. Discussion

Traditionally, renal allografts are placed in the right lower quadrant of the abdomen via a crescent-shaped incision called Gibson. During the procedure, the external iliac vessels are dissected after ligation of the lymph vessels with the aim of avoiding postsurgical complications, such as lymphocele. Then the anastomosis is performed laterally to the blood vessels of the kidney graft to the blood vessels of the right external iliac vessels, achieving these anastomoses with a continuous running suture of 6–0 prolene. The graft's venous drainage is connected to the external iliac vein or to the common iliac vein on the right side. Once the vascular anastomosis is completed, the kidney to be implanted is perfused with withdrawal of the vascular clamps. Subsequently, the ureteral implant is connected to the bladder after placement of a catheter in double J in the ureter [2].

When patients need a second transplant, the surgical procedure is done in the left iliac fossa of the abdomen using the same surgical technique. In the event that the patient loses the second transplant and need to have a third transplant, a median laparotomy is used, during which the right colon is mobilised using the Cattell-Braasch manoeuver and vascular dissection of both the inferior vena cava and the abdominal infra-renal aorta in order to place the renal graft.

This leads to a risk of thrombosis in the common iliac vessels and the inferior vena cava after the surgical intervention in patients who have received their dialysis through a translumbar catheter. At this point, the transplant surgeon must review other surgical alternatives through evaluation of the portal and mesenteric venous system in order to define the ideal anatomic site to enable venous anastomosis and to ensure an optimal venous drainage for the renal graft. Doing this type of reconstructions implies the risk of complications as thrombosis of the spleen-portal system, which finally could lead to portal hypertension with a pre-sinusoidal origin. In this case this complication wasnít presented.

In the paediatric population weighing under 15 kg, the initial approach is intra-abdominal because this allows an ideal space for the renal implantation, a decreases the risk of possible vascular complications. The abdominal aorta and the inferior vena cava