



Kidney Retransplantation in Pediatric with Infra Renal Cave and Iliac Veins Thrombosis: Case Report and Literature Overview

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Abstract

Introduction: Kidney transplantation is the renal substitution therapy of choice for children with end-stage renal disease (ESRD). However, 20% of patients in pediatric population after the first transplant suffer from graft loss and require retransplantation. Usually, vascular thrombosis is associated with long time of dialysis used after losing the allograft. Hence, it is important to find the best alternative technique to perform the retransplantation. The aim of this work was to evaluate the outcome of a patient that required a retransplantation with cave vein thrombosis in a Pediatric center.

Case presentation: Female of 13- year-old with ESRD had kidney transplantation and six years after, she lost the graft due to acute rejection. She had maintained on haemodialysis therapy and required a retransplant. The mesenteric vein was used as graft drainage due to a deep thrombosis of cave vein infra-renal (CVI) and left iliac vein (LIV).

Follow-up observations: The patient had satisfactory outcomes with decreased serum creatinine levels to normal creatinine (0.55mg/dl) at two weeks following the retransplant without clinical characteristics of thrombosis, gastrointestinal complications and urinary leakage.

Conclusion: Thrombosis of CVI and LIV may observe currently in kidney retransplantation and superior mesenteric vein may be a good option for graft drainage.

Keywords: Kidney-retransplantation; Veins-thrombosis; Pediatric; Superior-mesenteric-vein; Anastomosis

Abbreviations

FSG: Focal Segmental Glomerulonephritis; LIV: Left Iliac Vein; IMSS: Instituto Mexicano Del Seguro Social; ATN: Acute Tubular Necrosis; MVD: Mesenteric Vein Drainage; CVI: Cave Vein Infra renal

Introduction

Kidney transplantation is the renal substitution therapy of choice for children with end-stage renal disease (ESRD) [1 - 4] . In pediatric population, ESRD is secondary to many etiologies such as focal segmental glomerulonephritis (FSG), hypoplastic kidney and congenital urinary anomalies [1-3,5]. Further the

haemodialysis and peritoneal dialysis those patients require of a kidney transplant that is considered as the best treatment with a good survival rate [2,3,6]. Therefore, 20% of patients in the pediatric population after the first kidney transplant suffer from graft loss and require retransplantation [1]. Furthermore, losing an allograft is associated to recurrence diseases like FSG, urinary complication (vesicoureteral reflux, urinary tract infection, stenosis and lymphocele), graft reject and vessel thrombosis in pediatric recipients [5].

Respect kidney retransplantation, venous thrombosis has been considered as a factor of higher surgical risk, particularly in pediatric recipient. However, it is important to find the best alternative technique to perform the retransplantation in front of a deep vein thrombosis. However, many alternatives had been proposed such as infra renal vein cave, infra hepatic vein cave, gonad veins, mesenteric venous system and portal vein, for graft outflow [6,7]. Certainly, the presence of thrombosis in cave vein, aortic or iliac veins would cause technique modification in the surgical procedure [7-9]. The aim of this work is giving to know the outcome of a patient with graft drainage anastomosis with superior mesenteric vein, despite an a Gibson retroperitoneal incision in left fossa iliac and placing The graft in right abdominal site, infragall bladder due to a deep thrombosis of abdominal cave vein and ipsi lateral iliac vein in kidney retransplantation, in a Pediatric center [Hospital de Pediatría “Dr. Silvestre Frenk Freund” Centro Médico Nacional Siglo XXI: IMSS (Instituto Mexicano Del Seguro Social) México].

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Presentation of Case

Pediatric female patient of 13- year-old with congenital malformations, anomalies of the urinary tract (neuropathic bladder) and ESRD with vesicoureteral reflux historical was treated in the hospital. The patient had kidney transplantation and six years later the patient had lost the graft owing to acute rejection. The patient had maintained on haemodialysis therapy for two years through a permacath catheter in right sub clavia vein. The first graft was transplanted in the right iliac fosse with an astomosis of the renal vessels to the external iliac artery and the external iliac vein. The retransplantation kidney protocol of the patient had had venous system infra hepatic normal with Doppler ultrasonography report.

Surgical technique

The patient had a kidney retransplantation from a cadaveric donor with the possibility to use the left iliac fossa and performing vascular anastomosis, respectively in iliac vessels of this side. However, the trans-operative observations were: deep thrombosis of abdominal cave vein and left iliac vein (LIV) with a newly developed of retroperitoneal collateral circulation that it was of the fine caliber. Furthermore, the infra renal cave vein was fibrotic. The left Gibson incision was extended and the peritoneum was opened to enable the dissection of the abdominal cave vein infra hepatic; vessels graft anastomosis were anastomosed in the aortic artery and superior mesenteric vein respectively, and the graft was transplanted in abdominal right side infra gallbladder (Figures 1-3). The venous drainage of the graft was performed carefully with anastomosis of the renal vein with the superior mesenteric vein, and 6-0 prolene was used in continuous suture. Subsequently, reconstruction of the urinary track was achieved using the Lich-Gregoir technique by inserting double-J stent in the ureter (Figures 1,4), the cold/warm ischemia in the patient was 16 hrs and one hour respectively.

Follow-up observations

The patient had a good outcome; she was staying in the pediatric ICU for two days. She received immune suppression with methylprednisolone, tacrolimus, mycophenolate-mofetil and induction with thymoglobulin. Satisfactory, she received subdermic enoxaheparin for five days followed salicylic acid (ASA) with pentoxifylin for three months. The patient had satisfactory outcomes with decreased serum creatinine levels to normal creatinine (0.55mg/dl) at two weeks following the retransplant without clinical characteristics of thrombosis, gastrointestinal complications and urinary leakage. The patient was discharged two weeks after the transplant; her clinical evolution control was with daily U.S of the graft, gammagraphy at day two of retransplant presented data of acute tubular necrosis (ATN) that was resolved at week of the retransplant. The graft function was measured with the creatinine levels twice weekly and once monthly after the first month of transplant. Furthermore, at twelve months of retransplantation she continued with good renal function. It is important to mention that the double-J stent was removed at the third month of renal retransplantation (Figures 4-6).



Figure 1 Left Gibson incision and right graft with double-J stent.

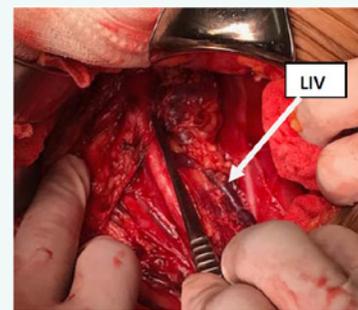


Figure 2 LIV thrombosis and retroperitoneal circulation.

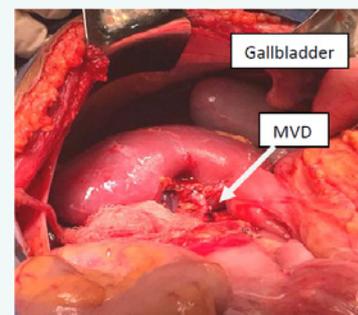


Figure 3 Infra hepatic placing graft with mesenteric vein drainage.

Discussion

Kidney retransplantation in pediatric patients with iliac Vein thrombosis ipsilateral is rare. Retransplantation accounts are observed for approximately 15% of the annual transplants performed in pediatric recipients in the USA [7,9]. Some reports observed any different causes of renal failure with respect to receiving a transplant after short-term dialysis or dialysis for more or less than one year; this patient had two years of haemodialysis therapy after losing the first graft. In regard at the type of graft, there were Patients with focal segmental glomerulosclerosis and systemic lupus erithematosus that received a kidney from a deceased donor more frequently than from a living donor. Moreover, when it is compared to children with hypoplasia and /or dysplasia [5,9-11]. In fact, it is important to consider the

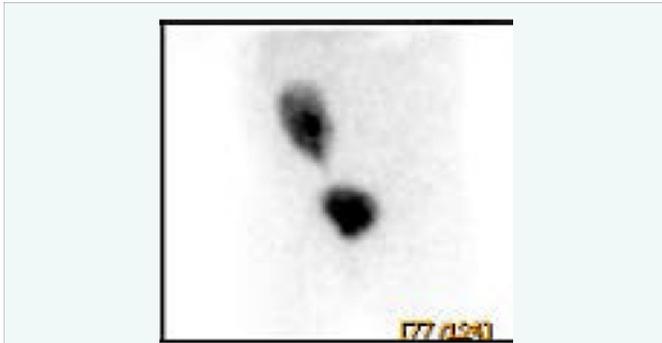


Figure 4 Observation of urinary tract reconstruction.

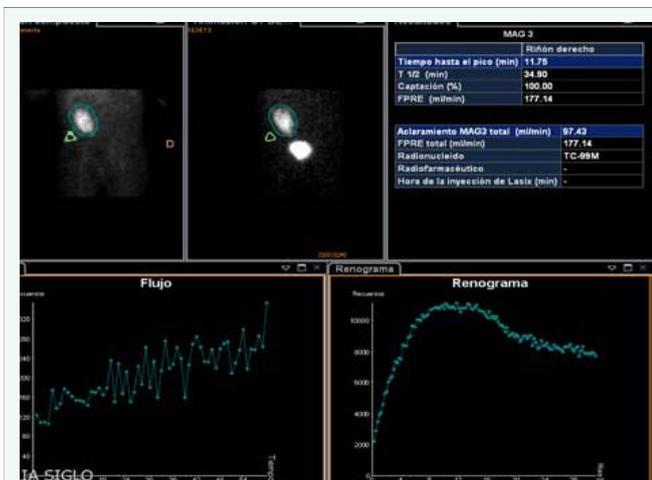


Figure 5 MAC3 Gammagraphy ATN.



Figure 6 Doppler US of vessels anastomosis and drainage.

etiology of the first transplant and graft failure subsequently, owing to its important role in the retransplantation. Hence, the patient of this case had congenital uropathic disease as cause of renal failure and the patient had the second graft from a cadaveric donor like it was in the first occasion of her transplant history [7,8,11]. On the other hand, Many studies observed patient potentially with higher risk of graft loss with respect to age, caused of renal failure, donor types (living or cadaveric) and the time on dialysis; the patient of this study presented failure of the first graft six years after the first transplant due to an acute reject

[1,4,7,10,12]. Reports have also suggested higher risk of graft loss among adolescents than among younger patients, with a lower risk again among the adult population [5,7,13]. The main of this work is giving to know the good outcome of an infra hepatic graft with drainage in the superior mesenteric vein in a kidney retransplantation despite a Gibson incision in the left iliac fossa.

Survival rates after kidney transplantation are on the rise due to multitude of probable factors according some reports [7,10,13,14]. However, in kidney retransplantation; technical circumstances making it more difficult or risky that may be also impact the outcomes of graft failure [7]. Furthermore, vascular complications are usually present and few reports observed that using the drainage through the mesenteric vein was ideal when the vein cave is unusable for an astomotic graft drainage, as it was in this retransplant patient [7,8]. In fact, in this patient the inferior vein cave was observed with a deep thrombosis with a new formation of this vein that was impossible to use for the graft drainage, situation that motivated the enlargement of left Gibson incision and placing at infra hepatic site the graft with an an astomotic drainage in the superior mesenteric vein. In regard, several clinical characteristics in the first year after transplantation have been suggested to be important predictors of long-term graft survival such as intra peritoneal organs, small bowel obstruction and technical complications [1,7,10,11,13]. Fortunately, this patient continues with good renal function with her first year of retransplantation; thrombosis vessel had not observed in the last US Doppler control of the patient.

Multiples reports identified factors that affecting the outcomes in primary and repeat kidney transplantation. On the other hand, others reports observed the impact of the interaction between risk factors and induction regimens on patient an allograft outcomes after kidney retransplantation [3,14,15]. Therefore, in this patient, congenital urinary tract defect (neuropathic bladder), cave vein thrombosis had been considered like a major risk factor. Furthermore, those situations were motivated to make a change in the surgical procedure when placing the graft into infra hepatic zone and using the superior mesenteric vein to anastomose the graft venous drainage. In fact, there are few reports that mentioned that the thrombosis of cave vein in kidney retransplantation should be motivated the anastomosis of graft venous drainage with the superior mesenteric vein, portal vein or upper cava vein. Even thought, it should be hopped some vessels complications at the observation of the deep thrombosis of the vein cave. In respect, it was necessary to ensure vascular drainage through a non-conventional anastomosis in this kidney retransplantation case. Despite the deep thrombosis vein cave, the patient had a good renal function with adequate serum creatinine. Currently, majority of pediatric renal allograft recipient will require one or more kidney retransplantation. Although, it is important to familiarize with other type of graft drainage anastomosis, like it was in this pediatric patient. Therefore, the debility of this work, it is the report of one case, whichever not allow some analysis and recommendations to resolve this vessel complication in kidney retransplantation in pediatric patients with neuropathic bladder [2,7,13].



Conclusion

Thrombosis of cave vein infra renal and external left iliac vein may observe currently in kidney retransplantation. The surgeon may consider other options to perform the graft drainage such as by using the cave vein superior, superior mesenteric vein, the portal vein among others. In this case, the use of superior mesenteric vein had demonstrated a good option. The recommendation is to perform Doppler ultrasonography and angiotomography in pre-transplant step to determine optimal vascular access type to prepare the surgical technique.

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