Scientific Research Publishing

Open Journal of Organ Transplant Surgery, 2022, 10, 1-6
https://www.scirp.org/journal/ojots
ISSN Online: 2163-9493
ISSN Print: 2163-9485

Kidney Transplantation Using Ovarian Vein. Presentation of Two Cases and Review of Literature

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How to cite this paper: Noël, C., Kouamé, Y.E., Bolasade, A.T., Dramane, T., Dung, H.A. and Clément, A.-N. (2022) Kidney Transplantation Using Ovarian Vein. Presentation of Two Cases and Review of Literature. *Open Journal of Organ Transplant Surgery*, **10**, 1-6.
https://doi.org/10.4236/ojots.2022.101001

Received: November 23, 2021
Accepted: January 11, 2022
Published: January 14, 2022

Abstract

A good vascular condition is fundamental for kidney transplantation. A bad arterial or venous supply may compromise graft survival. Discovery in operating theater of vascular anomalies not diagnosed by medical imaging may overwhelm operating protocol. Our cases emphasize the issue of pre operating evaluation. The cases are those of two women, aged 48 and 25 years, with chronic renal insufficiency, for whom living donor kidney transplantation was decided. During the process, a total obstruction of iliac vein was found and led to a change of technique. The dilated ovarian vein was used for the venous anastomosis while the arterial anastomosis was as usually made using the iliac artery. Post-surgical follow up was uneventful. These cases emphasize on the mandatory pre operative evaluation and the respect of guidelines in the process of kidney transplantation. They also open access to other operating strategies. The objective of this publication was to present our experience in dealing with an obstructed iliac vein and emphasize on the necessity to assess accurately vascular state in kidney transplantation.

Keywords

Kidney Transplantation, Vascular Anastomosis, Venous Obstruction

1. Introduction

Chronic renal failure (CRF) is a public health issue worldwide. In our country, the burden of this disease is heavy as most of the patients are young (age be-

tween 42 and 45 years). The most reachable treatment is haemodialysis which is only a temporary cure. There is a consensus about kidney transplantation (KT). It is established that it is the most effective treatment for chronic renal failure. This type of procedure was inexistent in our context for technical reason and lack of law ruling this activity. It was finally started in Côte d'Ivoire in 2012. KT is a complex technique that needs a good preparation. For the surgeons it is important to assess accurately arterial and venous state. A good vascular condition in the recipient permits easy anastomosis [1]. A vascular assessment with an angio CT is done for the recipient as well as the donor. Yet, the discovery during operation of vascular thrombosis not seen during pre-operative evaluation can disrupt the surgical protocol. These cases emphasize on the mandatory pre operative evaluation and the respect of guidelines in the process of kidney transplantation. They also open access to other operating strategies.

The objective of this publication was to present our experience in dealing with an obstructed iliac vein during kidney transplantation.

2. Observations

Case N˚1

A woman aged 48 years, with a renal insufficiency was followed and on dialysis in nephrology. She had a history of diabetes mellitus cured by oral antidiabetics and a high blood pressure also treated. A kidney transplantation was finally retained. The donor was the patient's sister. The kidney retrieved was the right one. The transplantation was done in the right iliac fossa. During the vessel's exposition, a total thrombosis of the external iliac vein was observed (**Figure 1**). The gonadal vein dilated was then used for the venous anastomosis (**Figure 2** and **Figure 3**). Arterial anastomosis was done between the renal artery and the external iliac artery. Operating time was 180 minutes. Venous suture took 22 minutes while the arterial anastomosis was done in 20 minutes. Anastomosis of the graft ureter to the bladder was done by Lich Gregoir procedure with a double J stent (size 6/16). Diuresis started on the operating table. Post-operative stay was 12 days. The double J stent was removed at day 28. The renal function improved. The post-operative period was uneventful and there was no surgical complication. Timeframe from surgery to the submission of this paper was five years.

Case N˚2

A 25-year-old woman was on dialysis for chronic renal failure. She had a high blood pressure controlled by medication. She was candidate for a living donor kidney transplantation and the donor was her brother. The kidney chosen was the left one and the transplantation done in the left iliac fossa. During the procedure, after dissection of the vessels, we noticed a total obstruction of the external iliac vein. The gonadal vein was used for the venous anastomosis (**Figure 4**). Operating time was 170 minutes. Venous suture took 20 minutes and the arterial anastomosis 18 minutes. Ureteroneocystostomy was accomplished using Lich Gregoir technique with a double J stent (6/16). Diuresis started here also on

the operating table. Hospital stay was 10 days. The double J stent was removed after 28 days. Renal function improved and the follow up was uneventful and no surgical complication was reported. Timeframe from surgery to article submission was 4 years.

The sociodemographic and clinical characteristics of the cases are summurized in Table 1.

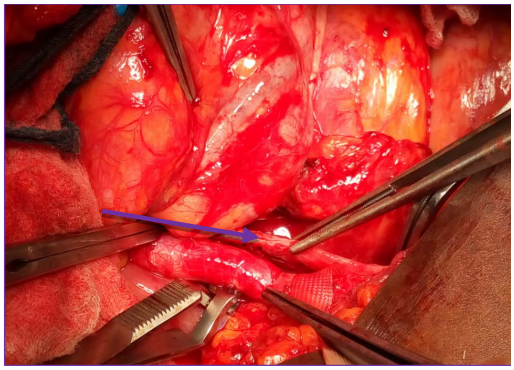

Figure 1. Exposition of iliac vessels (first patient). Obstruction of the iliac vein.

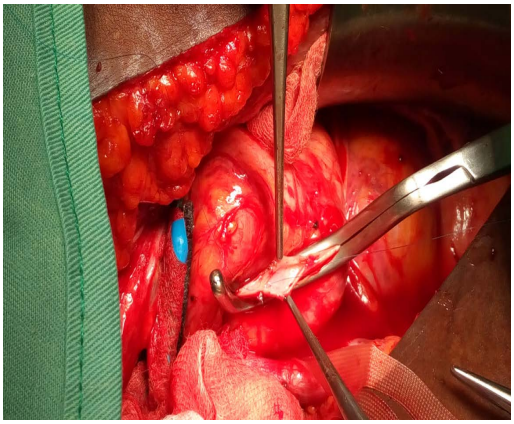

Figure 2. Exposition and opening of the ovarian vein (first patient).

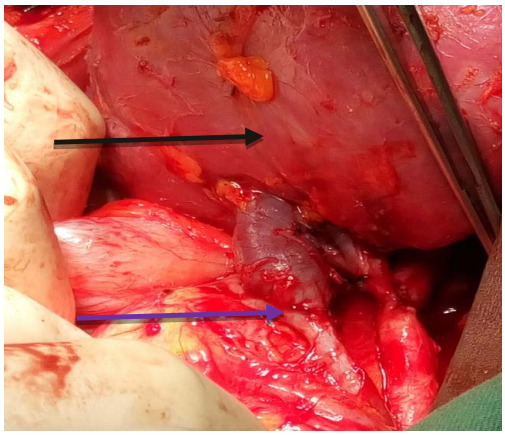

Figure 3. Venous anastomosis (first patient).

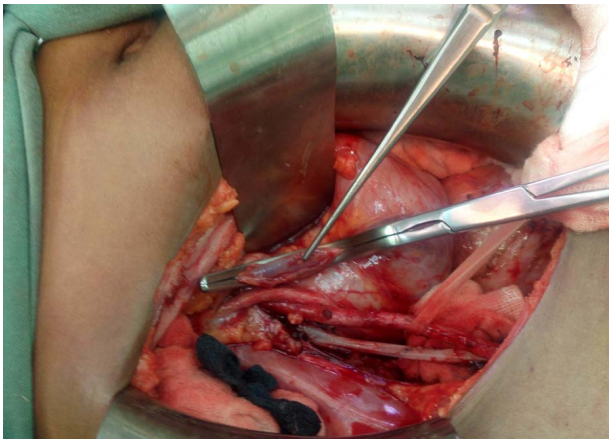

Figure 4. Exposure of iliac vessels and ovarian vein (second patient).

Table 1. Characteristics of the cases.

Characteristics	Case 1	Case 2
Sex	Female	Female
Age	48 years	25 years
Diabetes	Yes	No
High blood pressure	Yes	No
Dialysis	Yes	Yes
Donor	Sister	Brother
Operating time	180 min	170
Post-operative stay	12 days	10
Immediate complications	No	No
Follow up	5 years	4 years

3. Discussion

Kidney transplantation is a so serious challenge that no error is allowed at the beginning of such a program in our context. The risk was the compromission of the project in case of failure. This is due to the skepticism of the patients but also sometimes of the medical community and the health authorities. It was then mandatory for us to achieve all surgical procedures without failure. The pre transplant evaluation included a CT scan with 2 objectives. The first was to search vascular calcification of iliac vessels that can have an influence on the site of transplantation choice and the type of anastomosis. The second was to search a primitive neoplasia [2].

In our context, the selection was initiated by the nephrologist. The couple (donor and recipient) was then seen by the urologist and the anesthetist when there was no contraindication to the transplantation. But we never used Doppler US to explore venous network. In our two cases, the iliac vein thrombosis was discovered during the procedure. We noticed a network of collaterals drained in

a dilated gonadal vein. The big size of this vein made it suitable for a venous anastomosis. In some cases, it may be useful to implant the kidney on a vascular prothesis with a good result [3].

It is better to assess the diagnosis before surgery by MRI and CT scan [1] [4]. It is then possible to plan what to do for such an issue.

The usage of ovarian vein for the venous anastomosis obeys to the principles of transplant drainage. The right ovarian vein drains into the IVC and the left ovarian vein drains into the renal vein (5). The median size is about 3.93 mm [5]. The ovarian vein can so be safely used for renal transplantation [6] [7].

In case of vascular pathology, it is possible to use vascular protheses before the transplantation [3]. Anastomosis to the IVC under the renal vein or under liver vein is also described in the literature [8].

Another solution would be to place the transplant with an orthotopic anastomosis to the renal vessels after the removal of a native kidney [9]. The operation time of this technique is long and increases the morbidity. Some authors even used more complex techniques for kidney transplantation [4] showing that obstructed iliac vein should not exclude a patient from a kidney transplantation program.

Following the experience of these cases, we decided to include Doppler US in our pretransplant evaluation.

4. Conclusions

Although kidney transplantation using iliac vessels is the rule, the existence of iliac vein thrombosis should not exclude the patient for the procedure.

Kidney transplantation with ovarian vein is an alternative for patient with anomaly of iliac vein. It is necessary to make a good pre-operative evaluation to choose this procedure right away.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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