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A successful case of salvage kidney transplantation using the recipient gonadal vein to bypass a major outflow obstruction

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1. Introduction

Renal transplantation is the treatment of choice for chronic kidney disease and has been shown to have better outcomes than dialysis in multiple studies.[1] In the standard procedure, the donor renal artery and vein are anastomosed to the external iliac vessels of the recipient. In cases of an unusable vein, such as thrombosis of the iliac vein or inferior vena cava (IVC), renal transplantation becomes extremely difficult. These issues were originally considered contraindications to renal transplant, but several case reports have demonstrated ways to circumvent the obstructed veins by using other systemic or portal veins in the area. We present an unusual case of kidney transplantation on a right external iliac vein (EIV) that contained a chronic thrombus extending to the common iliac vein (CIV) and infrarenal IVC, hence, partially obstructing the right EIV. It was identified intraoperatively after a standard initial anastomosis. The transplanted kidney was salvaged by utilizing the recipient right gonadal vein to bypass the iliac outflow obstruction.

2. Case presentation

The patient is a 54-year-old female with a long history of systemic lupus erythematosus (SLE) that progressed rapidly to end-stage renal disease. She started hemodialysis in 1993 and has had her lupus controlled by low dose Prednisone. She exhausted her right and left upper arm arterio-venous (AV) fistulae and has been using a left thigh graft for vascular access. Her past medical history includes peripheral vascular disease, hypertension, dyslipidemia and coronary angioplasty with two stents placement (on Clopidogrel). As part of the patient's pre-transplant workup, ultrasound duplex (USD) of the iliac vessels revealed normal blood flow six months before transplantation. Her hypercoagulable workup was negative for lupus anticoagulant. A right kidney became available from a 33-year-old deceased donor who died from a head injury.

2.1. Description of the procedure

The risks and potential complications of the surgery were explained to the patient, and informed consent was obtained. Preparation of the renal allograft was performed on ice. The right renal vein was elongated by reconstructing the attached donor IVC. Through a standard Gibson incision, retroperitoneal space was created in the right iliac fossa. The reconstructed renal vein was connected to the recipient EIV using 5/0 Prolene sutures, followed by the arterial anastomosis between the renal artery and the recipient external iliac artery. After unclamping the anastomosis site, the kidney became extremely congested with microcapillary bleeding and began to ooze from the venous suture line. After realizing that the venous pressure was elevated, the arterial inflow was immediately reclamped. Intraoperative USD revealed chronic clot partially occluding the proximal EIV, extending to the CIV and infrarenal IVC. The ovarian vein was simultaneously dilated, so the gonadal vein was dissected until it became tension-free. The reconstructed renal vein was partially clamped at its side wall using a Satinsky clamp. After flushing with heparinized saline, an end to side anastomosis was performed between the ovarian and renal vein using 6/0 Prolene in running fashion (Fig. 1). The graft regained its pink color and produced a few drops of urine. A standard ureteroneocystostomy was performed over a double J stent. Warm ischemia time was 90 minutes. This included alternating periods of clamping and unclamping.

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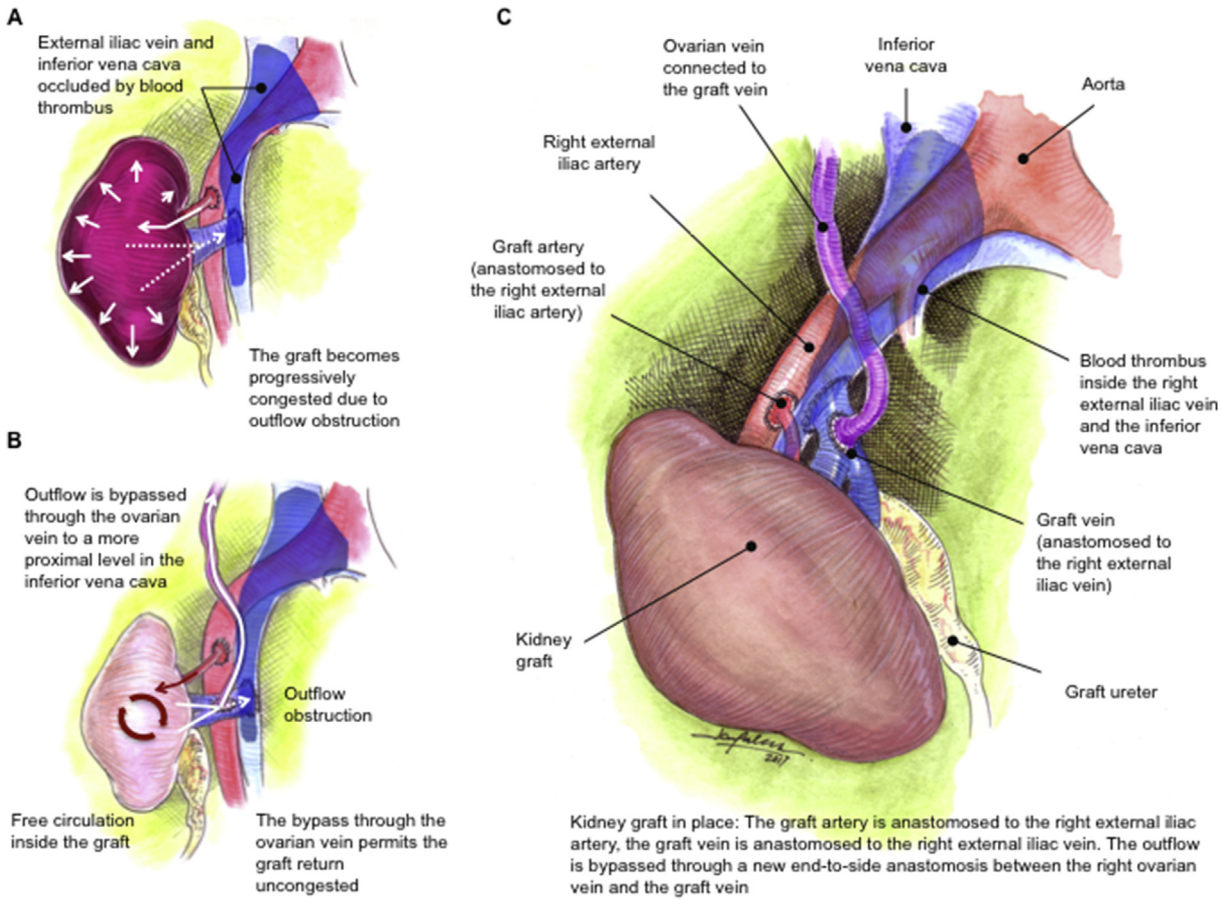

Fig. 1. Schematic drawing depicts the steps of gonadal vein utilization to bypass the outflow obstruction.

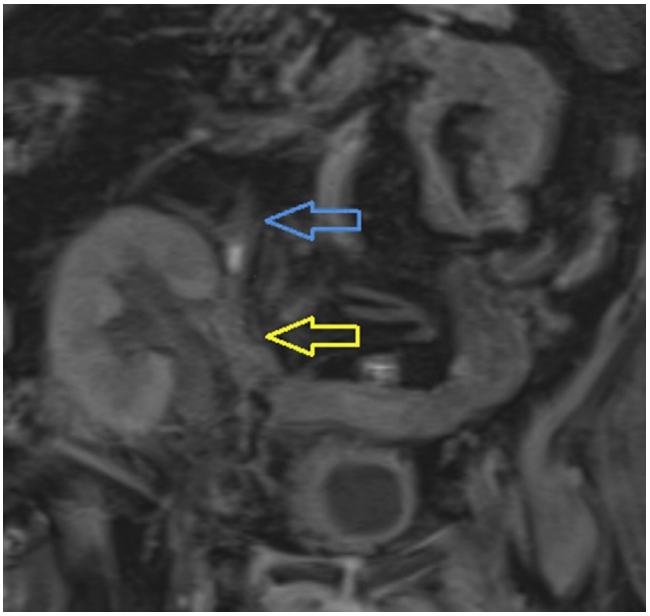

Fig. 2. Post-transplant MRI of abdomen demonstrates patent ovarian (blue arrow) and renal vein (yellow arrow). Note the ovarian vein dilation to compensate for the increase in renal blood flow. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

The patient received induction immunosuppression of thymoglobulin (1 mg/kg) along with methylprednisolone (500 mg intravenous) for three daily doses, and basiliximab (20 mg) for two doses. The patient was maintained on low-dose tacrolimus (target 12 hours trough level: 4–6 ng/ml) and enteric-coated mycophenolate sodium (720 mg) twice daily, as well as low-dose Prednisone. The patient was heparinized postoperatively and switched to Warfarin on postoperative day 3. Although she developed a perirenal hematoma that was drained percutaneously using CT guidance, her recovery was uneventful and was discharged on postoperative day 7. At four years follow-up, she has maintained adequate renal function with a stable serum creatinine (1.2 mg/dl) and patent renal allograft vessels (Fig. 2).

3. Discussion

Renal transplantation to the iliac veins remains standard under ideal conditions. However, a nonfunctioning iliac vein or IVC is not necessarily a contraindication for successful transplantation. Case reports have shown favorable outcomes with anastomoses to other nearby vessels, including portal and systemic veins. Kumar et al.[2] described a successful transplantation in which his team connected the donor renal vein to the recipient splenic vein (portal system) after a thrombus was discovered in the IVC. Patel et al.[3] have demonstrated successful use of the inferior mesenteric vein in renal transplantation, while Aguirrezabalaga et al.[4] have used the superior mesenteric vein. Although Wong et al.[5] reports a case in which renal transplantation was accomplished using the left

ovarian vein in a patient with an iliac vein/IVC thrombosis, we report the first case in which the gonadal vein was utilized in the setting of outflow obstruction after reperfusion to save the allograft.

Preoperative USD screening and thorough radiological investigation of all vessels should be performed in all potential renal transplant patients to determine the state of the iliac vein/IVC and to choose alternative anastomoses if needed. Regarding our patient, although pre-transplant workup was negative for lupus anticoagulant and USD didn't capture the venous thrombus probably due to its partial obstruction, the clinician should maintain a high level of suspicion particularly in patients who pose a greater risk of thrombosis such as recurrent AV fistulae clotting, peripheral vascular disease, and history of SLE. Unfortunately, there are no current guidelines or consensus on the management of a transplant with thrombosed IVC/iliac veins. While smaller veins may be used during anastomosis, they may predispose to thrombosis and other adverse effects.[3]

4. Conclusion

Kidney transplantation on gonadal vein is safe and efficient. Nevertheless, clinicians should use their clinical judgment and radiologic evidence to determine if an alternative vessel can be safely and effectively utilized for anastomoses if the IVC and iliac veins are not usable. Patients should also be closely followed after transplant for evidence of thrombosis or other adverse effects when alternative vessels are used for anastomosis.

Conflict of interest

Neither author has funding or conflicts of interest to report.

References

1. Wolfe RA, Ashby VB, Milford EL, et al. Comparison of mortality in all patients on dialysis, patients on dialysis awaiting transplantation, and recipients of a first cadaveric transplant. *N Engl J Med*. 1999;341:1725.
2. Kumar S, Rathore Y, Guleria S, et al. Renal transplantation in a child with thrombosed inferior vena cava. *Saudi J Kidney Dis Transpl*. 2014;25:367.
3. Patel P, Krishnamurthi V. Successful use of the inferior mesenteric vein for renal transplantation. *Am J Transpl*. 2003;3:1040.
4. Aguirrezabalaga J, Novas S, Veiga F, et al. Renal transplantation with venous drainage through the superior mesenteric vein in cases of thrombosis of the inferior vena cava. *Transplantation*. 2002;74:413.
5. Wong VK, Baker R, Patel J, et al. Renal transplantation to the ovarian vein: a case report. *Am J Transpl*. 2008;8:1064.

Abbreviations

AV: Arterio-venous
CIV: Common iliac vein
EIV: External iliac vein
IVC: Inferior vena cava
SLE: Systemic Lupus Erythematosus
USD: Ultrasound duplex