Kidney Transplant From a Deceased Donor With Renal Artery Aneurysm: A Case Report

Alireza Shamsaeefar,1 Saman Nikeghbalian,1 Kourosh Kazemi,1 Mohsenreza Mansorian,1 Nasrin Motazedian,2 Seyed Ali Malekhosseini1

Abstract

The use of marginal kidneys or kidneys with pathologic problems (such as renal artery aneurysms in a living or deceased donor) is on the rise due to organ shortages and improvements in surgical techniques. When renal vascular abnormalities are detected during a transplant, it puts the surgeon in a difficult position to decide what to do with the organ. In this study, we report a case of a kidney from a deceased donor who had 2 renal artery saccular aneurysms, which we were able to use for transplant. The recipient was a 61-year-old male patient with diabetic nephropathy and significant comorbidities. Kidney transplant was performed successfully with a good outcome. Recent advancements in surgical techniques have allowed the use of kidneys with renal artery aneurysms for kidney transplant, thus helping to overcome shortages of transplantable organs.

Key words: Saccular aneurysm, Shiraz, Transplantation, Vascular abnormality

Introduction

An unusual vascular anomaly is renal artery aneurysm, which has an occurrence rate of 0.1% to 1% worldwide. Saccular aneurysms account for 80% of these cases.1 Renal artery aneurysms are rare, and many surgical options have been explained regarding how to resolve this complication.2 Arterial reconstruction or endovascular patch-up is an optional treatment to repair renal artery aneurysms.3 The use of marginal organs or kidneys with pathological anomalies, such as renal artery aneurysm, from living or deceased donors is on the rise due to organ scarcities.4

Here, we report a case of renal transplant from a deceased donor with renal artery aneurysm. After back-table resection of the aneurysm and artery reconstruction, kidney transplant was performed.

Case Report

A 43-year-old female donor who suffered from brain death was encountered during organ retrieval. We incidentally found 2 saccular aneurysms while preparing the deceased donor’s grafts for transplant on the back table. One aneurysm was 1.5 × 1.5 × 1 cm on the bifurcation of the right renal artery, and the other was 1 × 0.5 × 0.5 cm on the secondary branch. However, the decision was made to use this kidney after removing the aneurysm. Laboratory examinations showed normal serum creatinine levels (0.8 mg/dL) with good urine output before organ retrieval.

After resection of aneurysms was completed, 4 branches of the renal artery remained intact. The kidney and branches were implanted on the recipient’s external iliac artery, one end to end and the others end to side by Prolene 7/0 suture (Figure 1 and Figure 2).

The recipient was a 61-year-old male hemodialysis patient who required dialysis due to secondary diabetic nephropathy. He also had coronary artery disease, which had required coronary artery bypass grafting 14 years previously. The patient also had hypertension and diabetes mellitus for the past 8 years with chronic kidney disease for 1 year; end-stage renal disease was diagnosed 6 months before transplant. Hemodialysis was performed twice a week. After preparation, the renal allograft was...
implanted in the right iliac fossa, and its vessels were anastomosed end-to-side to the external iliac vessels, with an extravesical ureteroneocystostomy performed for bladder anastomosis. At our center, we obtain written informed consent from all patients undergoing renal transplant.

Main renal artery and vein and intraparenchymal branches were left intact without any sign of thrombosis or rise of peak systolic velocity in arteries. A renal arterial resistive index of 0.57 to 0.62 in the main renal artery and intraparenchymal branches was observed.

The patient’s immunosuppressive therapy first included methylprednisolone at 250 × 3 per day and thymoglobulin at 1 mg/kg × 3 per day. Maintenance therapy included cyclosporine, mycophenolate mofetil, and prednisone; other medications were valganciclovir and cotrimoxazole.

The follow-up included sequential ultrasonographic examinations, confirming good-quality anastomosis and the arterial patch.

**Discussion**

Malformation of abdominal aorta branches rarely occurs. A saccular aneurysm is one kind of renal arterial aneurysm that is characterized by artery wall dilation with connection to lumen through an opening. Most cases of renal artery aneurysm are asymptomatic or incidentally found and not detected until surveillance of hypertensive conditions or other pathologies. They can also be detected during kidney...
retrieval from brain-dead donors or during bench surgery. Two other studies have also reported kidney transplant with renal artery aneurysm. These recipients also did not have any postoperation complications and showed good kidney function during follow-up.

This is the first case of kidney transplant from a deceased donor who presented with renal artery aneurysm at the Shiraz Organ Transplantation Center. Organ shortages because of increased demands for transplant and advances in surgical techniques have necessitated the use marginal organs. One such marginal organ is kidney with renal artery aneurysm that can be repaired with microsurgery techniques on the back table.

Hence, patients who have renal artery aneurysms may consider kidney donation for therapeutic option. This option is advantageous and safe for the donor and also helps to increase the organ transplant pool.

References