

## Case report

## Internal Iliac Artery Aneurysm Resection in Transplanted Kidney

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**Abstract**

In this report, we explain a case of true aneurysm of the internal iliac artery in a previously transplanted kidney, which was reconstructed successfully by interposing saphenous vein graft, using double balloon shunt to prevent renal ischemia as a new approach. The case was a 26 year old female with a 4 × 4 cm aneurysm at the anastomotic site of the transplanted renal artery detected by ultrasonographic evaluation and confirmed by magnetic resonance imaging technique. This rare complication was managed successfully through an open surgical arterial reconstruction using reversed saphenous vein graft. According to our findings, double balloon shunt seems feasible and safe in open surgical repair of transplanted renal artery and internal iliac artery aneurysms and can prevent renal ischemia during reconstruction.

**Keyword:** Aneurysm, internal iliac artery, renal ischemia transplanted renal artery, transplanted kidney

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**Introduction**

Vascular accidents after renal transplantation are rare but, when they happen, often result in loss of allograft.<sup>1</sup> Formation of aneurysm comprises 0.5% to 1% of all vascular accidents in transplanted kidneys.<sup>2</sup> It usually presents with hypertension, graft dysfunction and may be associated with an increased risk of hemorrhage due to disruption.<sup>3</sup> Here, we report a case of true aneurysm of the internal iliac artery in the transplanted kidney, which was reconstructed successfully by interposing saphenous vein graft, using double balloon shunt to prevent renal ischemia as a new approach.

**Case report**

A 26-year-old female, known case of kidney transplantation due to end stage renal disease since two years ago, who was planning for pregnancy sought medical advice. On ultrasonographic evaluation, a hypochoic mass was found in the transplanted renal pedicle. Subsequent magnetic resonance imaging confirmed a 4 × 4 cm aneurysm at the anastomotic site of the transplanted renal artery (Figure 1).

Open surgical repair was planned. Surgical exploration revealed an aneurismal mass at the site of renal artery anastomosis. Proximal and distal vascular control was obtained by meticulous dissection of the transplanted renal artery; then, a double balloon shunt (30 cm-8 French) was inserted between the common iliac

and the transplanted renal artery (Figures 2 and 3). The saphenous vein graft was reversed and anastomotized to the common iliac and the transplanted renal artery without allograft ischemia (Figure 4). Finally, the shunt was removed and the proximal and distal internal iliac and the transplanted renal artery were clamped and resection of the aneurysm was performed (Figure 4). During the post-operative period, the patient had normal renal function. The distal pulses on her right leg were normal. The patient continued on immunosuppressive therapy and was discharged on the seventh day after operation. Histopathology of the resected aneurysm wall was consistent with an organized thrombus. One month after operation, the result of Doppler ultrasonography was normal. Three months thereafter, the patient became pregnant. She had no important complaint on the last visit after 22 weeks of pregnancy.

**Discussion**

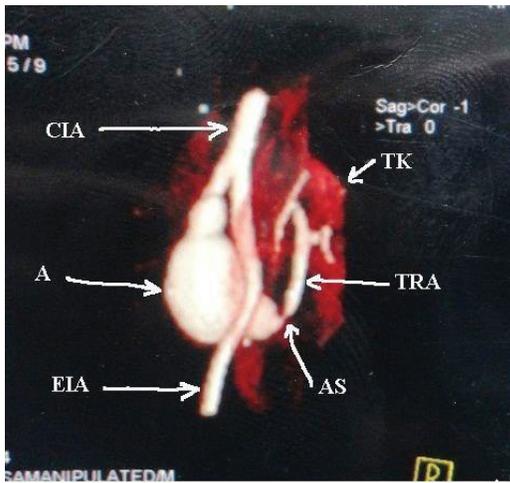
Post kidney transplantation aneurysms may be true or false. True aneurysms are less common and usually found at the site of anastomoses.<sup>4</sup> At present, repair and management of aneurysms are disputable.<sup>5</sup> Life threatening bleeding due to sudden disruption may need an urgent intervention to save the recipients.<sup>3</sup> New reports have accepted surgical intervention for those aneurysms which are symptomatic (>2.5 cm), complicated by infection, or subject to progressive enlargement and impending rupture.<sup>6-8</sup> Asymptomatic small aneurysms can be managed conservatively with regular monitoring.<sup>9</sup>

Open surgical repair and endovascular repair are the current treatment options for management of extra-renal aneurysms that may complicate kidney transplantation. Open surgical repair is done either through surgical aneurysm resection and reconstruction of the artery with patch angioplasty,<sup>10</sup> or graft bypass with saphenous vein or an allograft autotransplantation.<sup>11</sup> In the present case, surgical intervention was mandatory because the aneurysm was large enough and the patient was going to be pregnant. In similar surgeries for arterial reconstruction of transplanted kidneys, 30 to 45 minutes of ischemia is inevitable; so, to avoid long

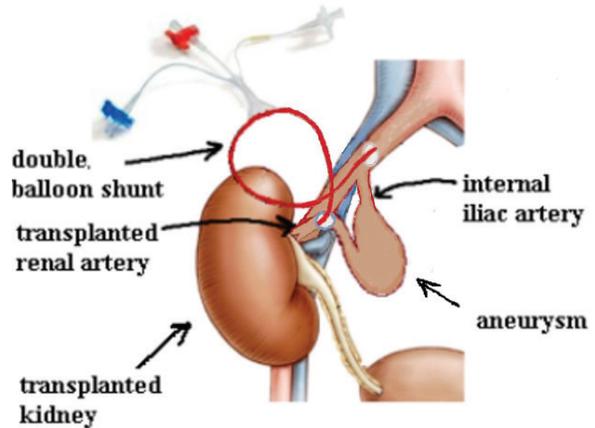
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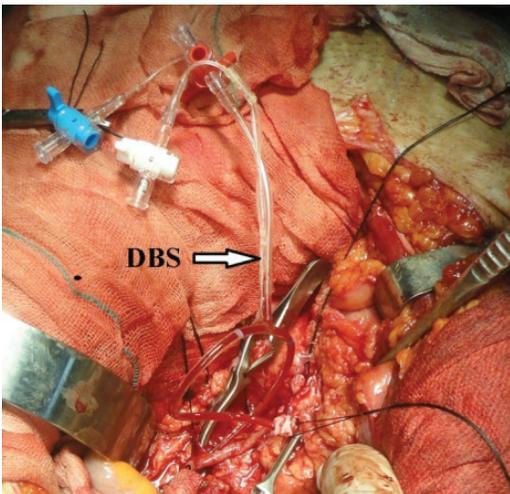
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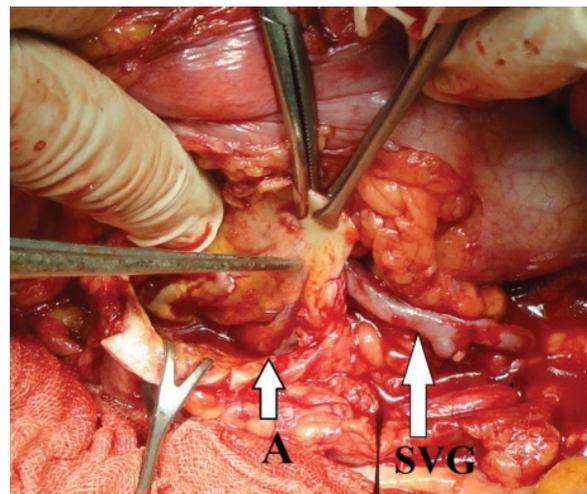
**Figure 1.** Magnetic Resonance Angiography (MRA) depicts a true aneurysm at the transplanted renal artery and right side internal iliac artery junction. Abbreviations: Common iliac artery (CIA), aneurysm (A), anastomotic site (AS), transplanted renal artery (TRA), transplanted kidney (TK), external iliac artery (EIA).



**Figure 2.** Schematic view of double balloon shunt (DBS) during arterial reconstruction.



**Figure 3.** Double balloon shunt (DBS) during arterial reconstruction.



**Figure 4.** Reversed saphenous vein graft (SVG) shown by the long arrow and aneurysm (A) by the short arrow before resection.

time ischemia, we perform a new technique using a double balloon carotid shunt to avoid tissue ischemia as is commonly used in cerebrovascular and cardiovascular surgeries. This approach minimized the duration of ischemia (30 second) successfully.

In conclusion, although rare, development of an extra-renal aneurysm of the internal iliac artery at the anastomotic site with the transplanted renal artery can lead to a potentially devastating loss of allograft and the need for allograft nephrectomy. We presented a case with this rare complication which was diagnosed and managed successfully through an open surgical arterial reconstruction using reversed saphenous vein graft. In open surgical repair of the transplanted renal artery and the internal iliac artery aneurysm, double balloon shunt seems feasible and safe, and can prevent renal ischemia during reconstruction.

### Fund

This study was approved by the Urology and Nephrology Re-

search Center, Hamadan University of Medical Sciences, Hamadan, Iran.

### Conflict of interest statement

The authors have no conflict of interest to disclose.

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