

## Iliac artery false aneurysm twelve years after allograft nephrectomy

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### ABSTRACT

We report a case of a non-infected right external iliac artery false aneurysm. The patient was a 44 year-old woman on chronic peritoneal dialysis who had had an allograft nephrectomy 12 years before and who presented with acute abdominal pain. Ultrasound and CT-scan showed a saccular aneurysm arising from the right external iliac artery. A large false aneurysm was identified during surgery, arising from donor arterial vessel remaining *in situ* after graft nephrectomy. Resection of the false aneurysm, with ligation of the right external iliac artery and interposition of a femorofemoral graft was successfully performed, with an uneventful post-operative recovery. False aneurysms after renal allograft nephrectomy are very rare. To our knowledge, this is the longest reported period of time between an allograft nephrectomy and clinical evidence of a false aneurysm.

#### Key-Words:

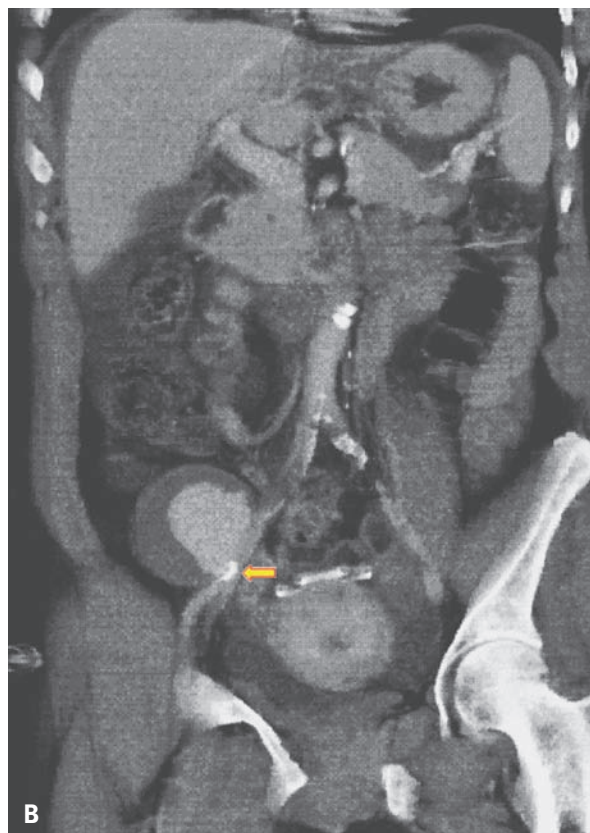
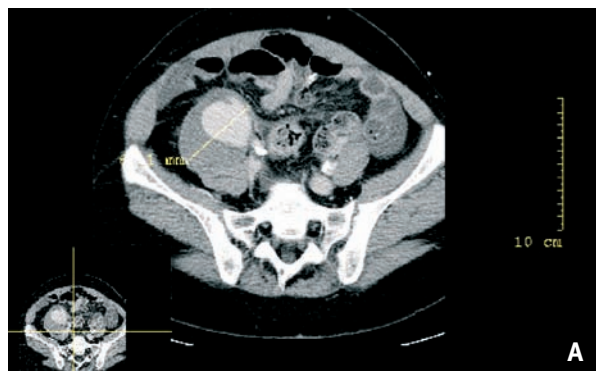
False-aneurysm; iliac artery; kidney transplantation.

### CASE REPORT

A 44 year-old female presented in 1989 with end-stage renal disease of unknown aetiology. She started haemodialysis and three years later received

a cadaveric kidney transplant. Chronic rejection with graft failure developed and, one year after transplant, she underwent an allograft nephrectomy, with ligation and cutting of the graft vascular pedicle. A segment of the donor vessels, anastomosed to the right external iliac vessels, was left in place and the patient reassumed haemodialysis. Immunosuppression was discontinued within one month. In 2004, after multiple haemodialysis access failures, the patient was transferred to peritoneal dialysis (PD).

During hospital admission for investigation of peritoneal ultrafiltration failure in 2005, she presented with acute lower quadrant abdominal pain, nausea and vomiting. The patient's vital signs were stable and abdominal examination revealed a tender pulsatile right iliac fossa mass. Abdominal ultrasound disclosed a 6 cm saccular dilatation of the right external iliac artery. Contrast-enhanced abdominal computed tomography (CT) revealed a saccular aneurysm arising from the right external iliac artery with a partial thrombus (Fig. 1). Inflammatory markers and haemoglobin level were normal. Blood cultures, peritoneal fluid cell count and culture were negative. A large false aneurysm was identified during surgery, arising from donor arterial vessel remaining *in situ* after graft nephrectomy. The patient was successfully treated by false aneurysm resection and ligation of the right external iliac artery with a femorofemoral bypass. Culture of the resected vascular segment was negative.



**Figure 1**

Contrast-enhanced CT scan. **(a)** Transverse image of the pelvis shows sacular aneurysm of the right external iliac artery, measuring 6 cm in diameter, with partial mural thrombus. **(b)** Frontal oblique volume rendered image clearly depicting the right external iliac artery origin (arrowhead) of the sacular aneurysm. The location in the transplant anastomotic site and the saccular configuration are highly suggestive of false aneurysm.

The immediate post-operative period passed without complications and the patient was transferred to haemodialysis following insertion of a right jugular vein catheter.

Clinical examination, laboratory investigations and imaging were normal four weeks after surgery.

## DISCUSSION

Arterial false aneurysms are rare complications of kidney transplantation. They occur in less than 1% of cases<sup>1,2</sup>. In a series of 725 kidney transplants<sup>2</sup>, vascular complications developed in 23 (3.17%) and only one (0.14%) patient developed pseudo-aneurysm in the arterial anastomosis. In another series<sup>3</sup> of 352 kidney allograft nephrectomies, performed for transplant failure, only two (0.6%) patients developed a false aneurysm on the donor side of the arterial anastomosis.

Renal transplant-associated false aneurysms are classified as intra-renal or extra-renal. The former develop after allograft biopsy and the latter usually arise in iliac arteries near transplant vascular anastomosis. Extra-renal false aneurysms can be associated not only with local infection<sup>4,5</sup> but also with allograft nephrectomy<sup>3-5</sup>.

The clinical presentation of false aneurysms is quite diverse although acute abdominal pain is a frequent symptom. This was the case with our patient. Peritonitis was excluded by normal dialysate microscopy and culture.

False aneurysms can also present as a non-specific inflammatory state<sup>4</sup>. Our patient, however, had normal inflammatory markers, haemoglobin and albumin levels.

In published cases, false aneurysms have usually become evident within the first five years after allograft nephrectomy. In our patient, the time between graft removal and clinical signs of false aneurysm was

twelve years. To our knowledge, this is the longest reported period of time between a transplant nephrectomy and clinical evidence of a false aneurysm.

Infection has been reported in the literature as a causal factor in the aetiopathogenesis of the false aneurysm. There was no evidence of infection in our patient during surgery and blood, peritoneal fluid and false aneurysm cultures were negative. These findings exclude an infectious cause. Dyslipidemia and hypertension, which were present in our patient, are also recognised risk factors<sup>7</sup>. Chronic rejection of the arterial donor vessel may also have contributed to false aneurysm formation.

False aneurysms may rupture<sup>3,5</sup> and can be associated with compression of adjacent structures, with development of urological, vascular or neurological syndromes<sup>4,6</sup>. False aneurysm rupture was a main concern in our patient as she presented with a rapidly evolving clinical picture and a prompt surgical intervention was made to avoid this serious complication. Relieving the compression of adjacent organs and the resolution of the associated systemic inflammatory state are other important issues in the treatment of false aneurysms.

There are two different approaches to treatment of this vascular complication. Endovascular repair with graft placement has had good results<sup>4,8,9</sup> and lessens the risk of major surgery. Graft interposition after false aneurysm resection is another possible approach, although the altered anatomy may increase the difficulty of the surgical procedure<sup>9</sup>. In our case, ligation of external iliac artery with interposition of a femorofemoral graft was performed. Multiple adhesions between the false aneurysm and adjacent tissues did not allow preservation of the peritoneal cavity and forced the switch from PD to haemodialysis.

## CONCLUSION

A false aneurysm arising from a previous graft vascular anastomosis may become symptomatic, with risk of rupture, many years after allograft nephrectomy. In our case, prompt diagnosis and treatment led to the successful resolution of this very rare and potentially lethal clinical condition.

**Conflict of interest statement.** None declared.

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