

# Abdominal Aortic Aneurysm in a Renal Transplant Patient

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## SUMMARY

Repair of an abdominal aortic aneurysm in a renal transplant recipient poses many different problems due to warm ischaemia to the grafted kidney. This is a case of 50 year old gentleman who had a previous renal transplant with abdominal aortic aneurysm. To reduce the effects of warm ischaemia on the transplanted kidney, an axillo unifemoral bypass was done prior to aneurysm repair. This ensured continued perfusion to the transplanted kidney. The post operative period was complicated by Methicillin Resistant *Staphylococcus Aureus* infection of the graft.

## KEY WORDS:

*Abdominal Aortic Aneurysm, Renal transplant, Warm ischaemia*

## INTRODUCTION

The treatment of abdominal aortic aneurysm entails the cross clamping of the aorta and the iliac vessels prior to aneurysmectomy and insertion of the graft. This is a major problem in patients who have had prior renal transplant as the warm ischaemia can damage the precious kidney. Other problems posed are the inherent immunosuppression in post transplant patients which increase the risk of infection. The potential aortic graft infection can be disastrous and is often fatal. This is a case report of a known renal transplant patient who underwent an abdominal aortic aneurysm repair.

## CASE REPORT

A 55 year old gentleman had a living related renal transplant in 1986. He has been well on oral Cyclosporin for immunosuppression and his renal function remained normal 19 years post transplant. He also has diabetes mellitus and is on subcutaneous insulin. He was admitted with complaints of non specific abdominal pain for three months. The pain radiated to the back and it was well controlled with analgesics. There was a pulsatile central abdominal mass 4cm in diameter which was non tender. Peripheral pulses were normal. A CT of the abdomen showed a saccular infrarenal abdominal aortic aneurysm measuring 3.8 x 2.3 x 4cm (Figure 1). The transplanted kidney was well contrasted and the left iliac artery was not aneurysmal (Figure 2). As there was evidence of a mycotic aortic aneurysm, he was started on IV Ceftazidime pre-operatively which was continued through the post-operative period. He was then prepared for surgery.

In order to decrease the effects of aortic cross clamping on the transplanted kidney, a left axillo unifemoral bypass was constructed prior to laparotomy with supported PTFE grafts. The aorta was then explored and it was found to be

surrounded by inflammatory tissue. There was a pseudoaneurysm arising from the origin of the inferior mesenteric artery. There was no pus or free fluid. An inlay Dacron graft was then inserted. The aortic wall cultures had a negative yield. His renal function was unchanged post op and he was discharged well two weeks after that.

A month after surgery, he complained of a painful left groin mass. This was associated with fever and a raised white cell count. An ultrasound of the mass showed a pseudoaneurysm arising from the anastomotic site. Exploration and repair was performed and both blood and tissue cultures grew Methicillin resistant *Staphylococcus aureus* (MRSA). Postoperatively, he was treated with intravenous vancomycin for 14 days and this was followed by oral linezolid. He developed an allergic reaction to linezolid which was then discontinued.

Unfortunately, he also developed a collection over the left axillary artery anastomosis which required drainage. Despite aggressive antibiotic treatment and wound debridement, the MRSA infection persisted in the groin wound. This necessitated the removal of the axillo unifemoral graft. Eventually both the MRSA infection in the blood and the groin wound were eradicated after six weeks of intravenous vancomycin and nanocrystalline silver dressing. He is currently well except for intermittent claudication of about 100m in his left lower limb. His renal function has remained unchanged to this date.

## DISCUSSION

As the number of kidney transplant patients in Malaysia is on the rise, currently at 1687 functioning grafts as of 2005, the lifespan of renal failure patients have also increased<sup>1</sup>. Patients with renal transplants have many risk factors that promote atherosclerotic diseases including abdominal aortic aneurysm. In addition to that, the immunosuppression that is crucial for these patients renders them susceptible to aortic infection. This in turn causes mycotic aneurysms of the aorta to occur.

The challenge that is faced by the vascular surgeon in treating these patients include graft ischaemia during cross clamping, graft infection due to immunosuppression and the multiple comorbidities often seen in these patients. The biggest challenge however, remains to be the ischaemic insult to the precious transplanted kidney during cross clamp. Many methods have been employed to negate the detrimental effects of warm ischaemia to the kidney. This includes temporary axillo femoral bypass, Gorts aortic-femoral shunt,

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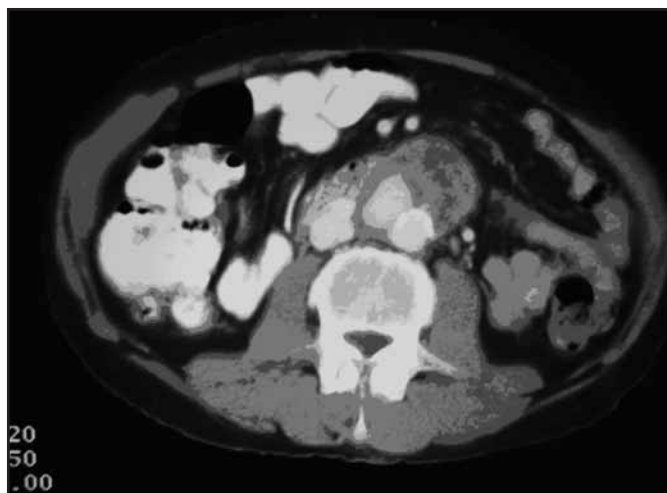


Fig. 1: Contrasted CT abdomen showing a pseudoaneurysm in the lower aorta



Fig. 2: Contrasted CT abdomen showing the well contrasted transplanted kidney

indwelling shunts, partial extracorporeal circulation, local and total hypothermia<sup>2,3</sup>. No studies have been done to compare these modalities as the numbers are often small. In a literature search carried out by Reddy et al for emergency repair of abdominal aortic aneurysm in renal transplant recipient, they found that two thirds of the authors used to the axillo bifemoral bypass method to maintain graft perfusion. All the patients with grafts survived post-operatively. We used an axillo femoral shunt graft for this patient and there was no deterioration in kidney function post cross clamping. The graft was left permanently in situ as removal of the graft would lead to more morbidity. Moreover, parallel flow from the high flow aortobifemoral graft will cause thrombosis of a low flow axillo femoral graft. The drawback of leaving the axillo femoral graft to thrombose is that more prosthetic material is left in situ, thus increasing the possibility of graft infections.

Currently, endovascular repair is an attractive option for repair in these patients. The advantages include avoidance of prolonged graft ischaemia during aortic cross clamping, less blood loss and less systemic complications. However, the large amount of contrast used limits its usage. The use of CO<sub>2</sub> as contrast reduces the need of nephrotoxic contrast agents, thus protecting the graft<sup>4</sup>. Thus in a patient with suitable anatomy, endovascular stenting should be considered in renal transplant patients.

The other problem faced in the management of this patient is the immunosuppression from the Cyclosporin that the patient is on. The drugs were continued through the perioperative period and the plasma level is checked post-operatively to ensure adequate plasma levels.

This patient had a stormy recovery due to an MRSA infection of the axillo femoral graft which was due to the immunosuppression. The graft infection resulted in graft

dehiscence and formation of a pseudoaneurysm. Both vancomycin and linezolid was used to treat the systemic infection. MRSA infections of vascular grafts have high amputation and mortality rates. In an audit by Naylor *et al* of all vascular graft infections in Great Britain and Ireland, patients with MRSA +ve infections were more likely to die or undergo amputations than MRSA -ve patients (33% vs 13%)<sup>5</sup>.

To overcome this problem, an anti MRSA antibiotic like vancomycin should be added to other broad spectrum antibiotic like Cefazidime for prophylaxis. This is especially in patients with a history of long hospitalization and also on immunosuppressive drugs. Other methods to reduce infection rates would be to use silver impregnated Dacron grafts which are now available.

In conclusion, AAA repair in a renal transplant patient is a safe procedure if renal protection is employed. Despite the many methods used, there has been no single technique which has been proven superior to the others. This is because the numbers are small and carrying out comparative studies would be impossible. In addition to renal protection during repair, other problems like immunosuppression and graft infections are also of concern.

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