

# Experience in Kidney Transplantectomy with Temporary Iliac Arterial Occlusion for Bleeding Control in Patients with High Cardiological Risk – A Case Report

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. Author DRD designed the study, managed the literature searches and wrote the first draft of the manuscript. All authors read and approved the final manuscript.*

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Case Study

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## **ABSTRACT**

**Introduction:** Approximately 16% of transplanted kidneys require surgical removal which may occur in cases of graft intolerance syndrome, premature loss, chronic inflammation, recurrent infections and cancer. When indicated, the classic technique is the open nephrectomy that may represent mortality rates at around 6 to 14%, reaching as high as 38% in cases of the procedure. The objective is to report a case of renal transplantectomy with intraoperative use of an iliac intravascular balloon catheter to control bleeding in a high-risk patient. The information was through reviewing the medical record, photographic record during the procedure and reviewing the literature.

**Results:** In this current case, the temporary occlusion of the iliac artery by a vascular balloon catheter proved to be effective in controlling bleeding during graft removal in a patient at high surgical risk.

**Conclusions:** Mortality related to transplantectomy is high, especially in cases of acute indication for the procedure and blood loss is an independent factor associated with increased morbidity and

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mortality and hospital stay. In this sense, the intraoperative use of a transient iliac intravascular balloon catheter in the reported case allowed for the control of bleeding during a graft nephrectomy in a high-risk surgical patient. Thus, there was a shortening of the surgical time, decreased need for transfusion, and safe anesthetic management, showing itself as an alternative in cases where surgical removal of the graft must be performed urgently.

**Keywords:** *Transplantectomy; transplants; graft nephrectomy; intravascular; temporary arterial occlusion.*

## 1. INTRODUCTION

Approximately 16% of transplanted kidneys require surgical removal that may occur in cases of graft intolerance syndrome, premature loss, chronic inflammation, recurrent infections and cancer [1-4]. When indicated, the classic technique is the open nephrectomy that may represent mortality rates around 6 to 14%, reaching as high as 38% in cases of the procedure [3-5]. We do not find reports in literature of the use of temporary arterial occlusion in kidney transplantectomy. The objective was to report a case of intraoperative use of iliac vascular balloon catheter to control surgical bleeding in a high risk patient with significant heart failure who underwent transplantectomy due to kidney graft infection. The information was obtained through a review of the medical record, a surgical photographic record to which the

patient was submitted, and a review of the literature.

## 2. CASE PRESENTATION

Woman, 40 years old, kidney transplanted from a living donor in November 2011 due to acute renal failure (ARF) associated with acute systemic lupus erythematosus (SLE) during pregnancy. After 7 years, she evolved with graft loss due to glomerulosclerosis not related to reactivation of disease and need to return to hemodialysis, performed through Permicath®.

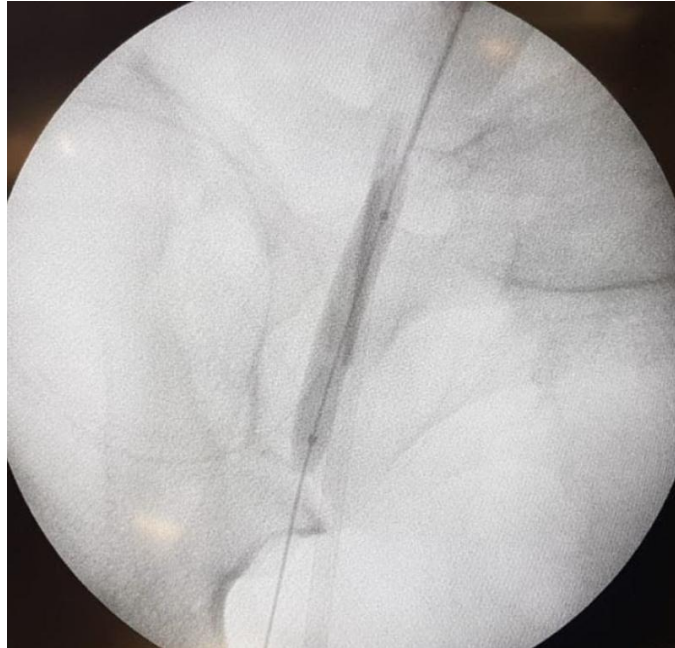
In April 2019, she presented a feverish condition due to bloodstream infection associated with the catheter. Even with broad-spectrum antibiotic use, the patient progressed with worsening of her clinical status, infection of the transplanted kidney (Fig. 1), and acute heart failure due to endocarditis with a 23% ejection fraction documented by an echocardiogram.



**Fig. 1. Computer tomography scan of the abdomen with signs of infection in a transplanted kidney**

Open renal transplantectomy was indicated due to the absence of improvement of the infection, performed with the intraoperative vascular control using a balloon catheter in the right external iliac artery - anastomosis site of the transplanted kidney - in order to reduce the risk

of bleeding. Surgical technique: a puncture was performed in the left common artery using Seldinger technique, passage of the introducers and positioning of a 7x40 mm Armed Balloon Catheter in the right external iliac artery confirmed by fluoroscopy (Figs. 2 and 3).



**Fig. 2. Fluoroscopy: armed balloon catheter positioned in the right external iliac artery obliterating the renal artery of the transplanted kidney**



**Fig. 3. Fluoroscopy after transplantectomy without signs of bleeding**

The procedure ended with open transplantectomy that presented intense adhesion and difficult access to the renal hilum. At the slightest sign of bleeding, insufflation of the balloon catheter with temporary local hemostasis was performed, allowing ligation of the renal hilum block and subsequent reinforcement with suture after removal of the graft. There was no significant bleeding during the procedure, or after removal of the vascular catheter.

### 3. DISCUSSION

The mortality rate related to renal transplantectomy is high, between 6 and 14%, especially in cases of acute indication for the procedure and blood loss is an independent factor associated with greater morbidity and mortality and hospital stay [1-3].

Renal artery embolization before transplantectomy has been used, facilitating the operative approach and reducing bleeding and the need for transfusion [6]. In addition, the technique is also an alternative to nephrectomy in patients with non-functioning allograft and intolerance syndrome to the graft [7,8].

However, we did not find any reports in the literature of temporary iliac artery occlusion in nephrectomy of the transplanted kidney. In obstetrics, this technique has increasingly become the key point as a prophylactic measure in bleeding due to placental accretion before conventional cesarean hysterectomy with significant risk of bleeding [9,10].

Transplantectomy has high mortality and morbidity rates, possibly due to graft fibrosis [3]. In this sense, the transient occlusion of the iliac artery by a vascular balloon catheter in the case reported allowed for bleeding control during graft nephrectomy in a high-risk surgical patients. Thus, there was a decrease in the surgical time, a decrease in the need for transfusion, and a safe anesthetic management, showing itself as an alternative in cases in which the surgical removal of the graft must be performed urgently.

### 4. CONCLUSION

In the present case, the temporary occlusion of the iliac artery by a vascular balloon catheter proved to be effective in controlling bleeding during graft removal in a patient at high surgical risk.

### CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

### ETHICAL APPROVAL

It is not applicable.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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