

# Embolization in Patient with Renal Cell Carcinoma Submitted to Transplantectomy

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## Abstract

Renal cell carcinoma is a rare condition in transplanted kidneys. We report a case of patient with tumor in kidney graft 17 years after transplant that was submitted to embolization with subsequent transplantectomy. Magnetic resonance imaging showed a 1-cm nodule in the renal allograft. Treatment included transplantectomy preceded by embolization of the renal artery. In this case, intra-arterial embolization preoperatively facilitated organ removal.

**Keywords:** Transplant; Tumor; Surgical treatment; endovascular procedure

## Introduction

Renal cell carcinoma is a rare condition in transplanted kidneys (Shprits et al., 2016). It represents 3% of all cancers in the general population; in renal transplant patients, this rate is 4.6% (Zavos et al., 2007). Of these, about 90% occur in native kidneys, with the remaining patients developing cancer in transplanted kidneys (Zavos et al, 2007). The treatment of this neoplasia includes lumpectomy with maintenance of the graft to preserve renal function and avoid the patient returning to dialysis (Taj et al., 2008), or transplantectomy and return to dialysis due to the high incidence of metastasis even for under 3-cm tumors (Peres et al., 2006).

No articles in the literature describe intra-arterial embolization in patient with renal tumors submitted to transplantectomy. We report a patient with renal tumor 17 years after a kidney transplant who was submitted to embolization and subsequent transplantectomy.

## Case presentation

A 52-year-old white male, underwent renal transplantation from a living donor (sister) seventeen years ago, after three years on dialysis due to chronic renal disease caused by hypertensive nephrosclerosis. The patient was immunosuppressed with azathioprine, cyclosporine and prednisone and had a

good evolution of renal function (mean plasma creatinine: 1.2 mg/dL). Two months ago, he presented with loss of graft function and was required to return to hemodialysis. A computed tomography of the abdomen revealed a mass in the transplanted kidney (Figures 1 and 2) that was confirmed by magnetic resonance imaging (Figure 3). A 2-cm complex cystic lesion and a 1-cm solid nodule with contrast up take and features suggestive of malignancy were diagnosed (Figure 3).

About 12 hours before transplantectomy, retrograde catheterization of the left femoral artery was performed for coil embolization of the renal artery of the graft in the right iliac fossa region (Figure 4). After resection, the surgical specimen was sent for histopathological assessment (Figure 5) which confirmed renal cell carcinoma. The patient was discharged and, after one year of follow up, he continues on hemodialysis but without evidence of metastasis.

## Discussion

The risk of developing renal cell carcinoma in patients submitted to renal transplantation is 7 to 10 times greater than the general population; however only 10% of these tumors are in the renal graft (Shprits et al., 2016).

The prognosis of renal adenocarcinoma (RCC) after kidney transplant is better than in native kidneys due

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Published at: <http://www.ijsciences.com/pub/issue/2016-07/>

DOI: 10.18483/ijSci.1115; Online ISSN: 2305-3925; Print ISSN: 2410-4477



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to the early diagnosis related to monitoring by diagnostic imaging tests. Although RCC is less aggressive in these patients compared to the general population, several cases of metastasis in different locations have been reported (Alonso et al., 2012).

The time between renal transplantation and the detection of a tumor in a renal allograft varies from nine months to 29 years (Shraideh et al., 2014). Early diagnosis of tumors is essential for tracking malignancies in native kidneys and grafts (Gerth et al., 2012).

Renal tumor sizes generally range from 0.5 to 4.0 cm, although there have been two reports of tumors of from 6 to 8 cm; the size in these cases did not affect the prognosis after treatment (Khurram et al., 2011). Transplantectomy is indicated when a tumor is larger than 40 mm (Banshodani et al., 2015). In the current case, the RCC graft was treated by transplantectomy due to the tumor size (1 cm) and lack of organ function.

During the surgical procedure to remove the transplanted kidney with tumor, preoperative arterial embolization can facilitate the removal of tumor due to several factors such as: 1- occlusion of renal artery reducing the intraoperative loss of blood; 2- decreasing of tumor size and surgical time; 3- prevention of bleeding complications during surgery, and 4- better vision during the procedure (Espinosa et al., 2008). In this report, the intra-arterial embolization coil placement 12 hours before transplantectomy was effective, as intraoperative bleeding was minimal, the surgical time required was less than expected, and no complications were experienced during or after the procedure.

## Conclusion

The use of coil embolization before transplantectomy is a viable option in kidney transplant patients with renal cell carcinoma. This endovascular procedure provides satisfactory results in terms of surgical time and complications after transplantectomy.

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Figure 1 - Abdominal computed tomography showing nodule in the transplanted kidney.



Figure 2 - Abdominal computed tomography showing nodule in the transplanted kidney.

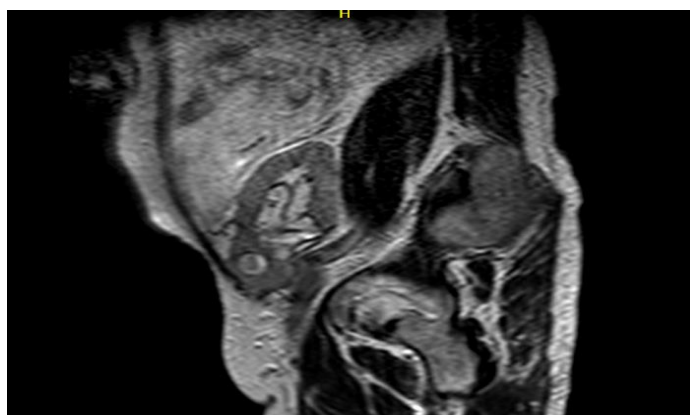


Figure 3 - Magnetic resonance imaging of the pelvis showing nodule in the transplanted kidney in the right iliac fossa region.

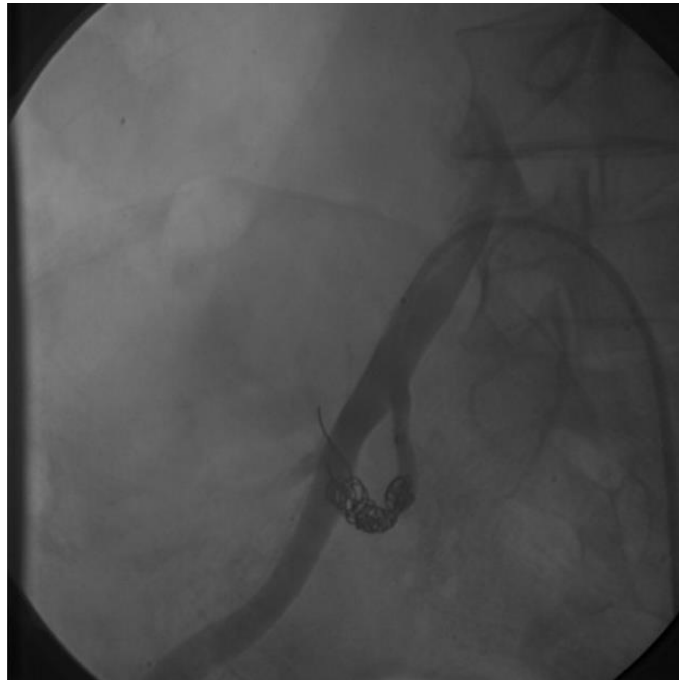


Figure 4– Coil embolization of the renal artery graft in the right iliac fossa region.

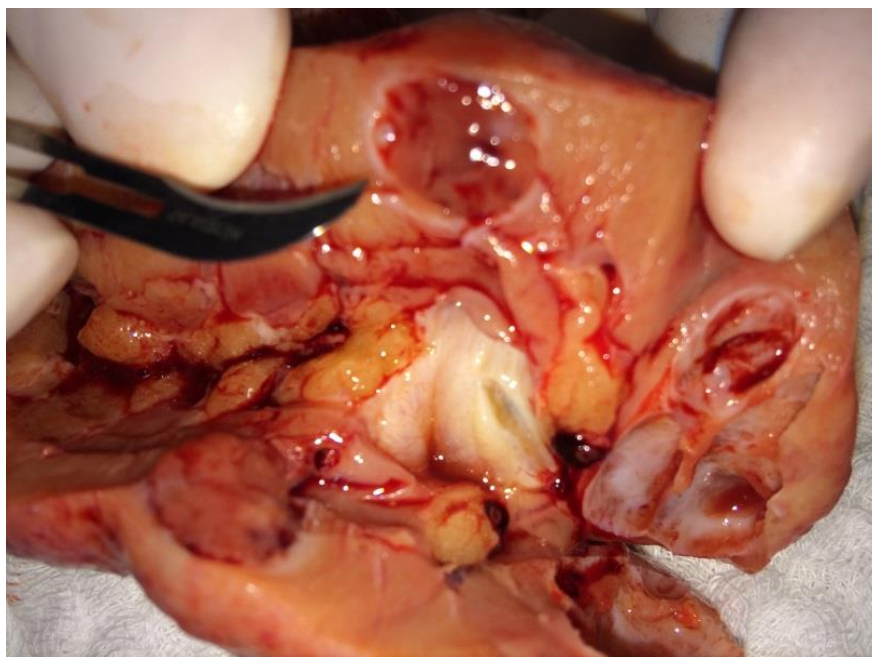


Figure 5 - Macroscopic image of neoplastic nodule in renal allograft.