

# Renal Artery Pseudoaneurysm Following a Laparoscopic Partial Nephrectomy Hemorrhage after a Successful Embolization

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## INTRODUCTION

Laparoscopic partial nephrectomy is increasingly practiced by urologists, and its technique is constantly improving. Recently, Simforoosh and colleagues reported a simplified technique for performing partial nephrectomy.<sup>(1)</sup> Renal artery pseudoaneurysm is an uncommon complication after laparoscopic partial nephrectomy.<sup>(2)</sup> Few cases have been reported so far with this problem, and all of the reported patients who had undergone successful angio-embolization were free from hematuria.<sup>(3,4)</sup> We present a patient who had a massive hematuria and severe drop of the blood pressure in spite of her successful embolization of renal artery pseudoaneurysm after laparoscopic partial nephrectomy.

## CASE REPORT

A 26-year-old woman presented primarily with a transient left flank pain with no accompanying hematuria and urinary symptoms. Ultrasonography showed a 36-mm hypoechoic mass with dimensions in the middle part of her left kidney. Computerized tomography (CT) confirmed an enhanced hypodense mass of 30 × 25 mm in the middle lateral part

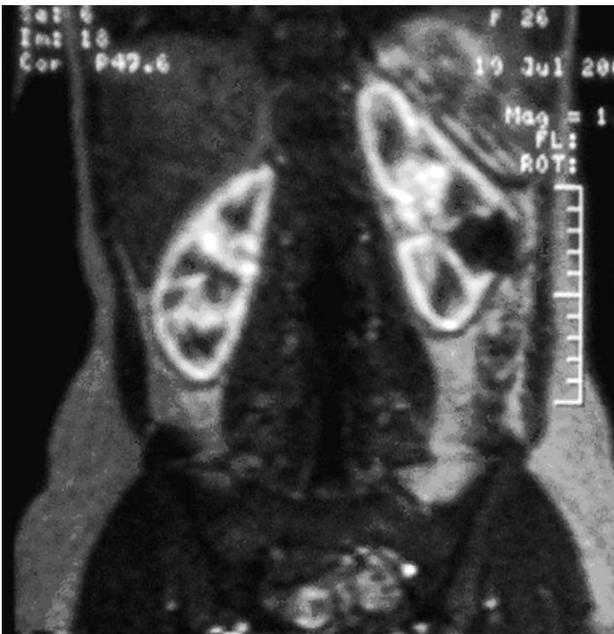
of the left kidney (Figure 1). She underwent laparoscopic left partial nephrectomy with transperitoneal approach. The main renal artery was clamped with bulldog (ischemic time, 38 minutes), and then the tumor was resected. The kidney defect was approximated with 0-0 vicryl running sutures buttressed with hemostatic clip instead of knots. After declamping the renal artery, no significant bleeding was detected from the resection bed. On the 2nd postoperative day and due to a gross hematuria and massive clot passage, her hemoglobin dropped from 13.2 mg/dL to 8.5 mg/dL. After transfusion of packed red blood cell and the other conservative therapies, hematuria stopped and hemodynamic state improved. Thus, the patient was discharged 7 days after the operation.

Five days later, she was re-admitted with gross hematuria and orthostatic hypotension. Her hemoglobin level slumped down to 7.6 mg/dL, and ultrasonography revealed a 50-mm collection in the lower part of the left kidney with suspicious hematoma. The patient underwent angio-embolization for the 2.5-cm pseudoaneurysm which was fed through a branch of the middle segmental artery (Figure 2).

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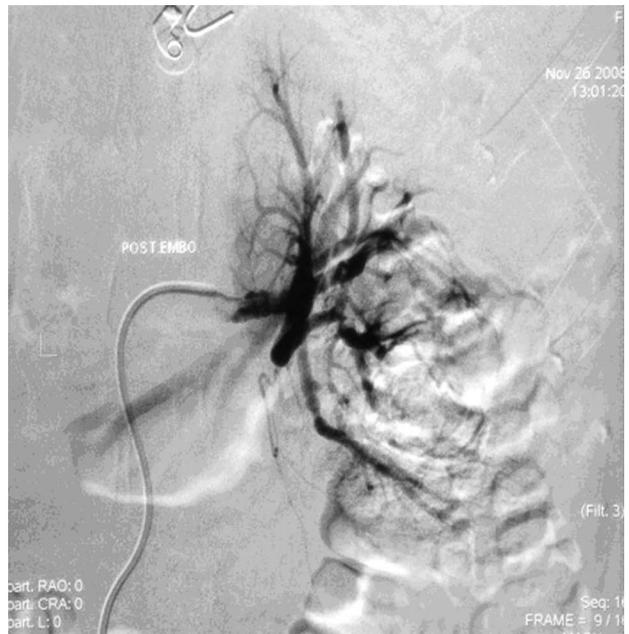


**Figure 1.** Hypodense mass with dimensions of 30 × 25 mm at the middle lateral part of the left kidney.

The postembolization images confirmed the successful improvement of the vascular malformation (Figure 3). Two days later, she had transient hematuria with some fluctuations in her vital signs. Then, massive bleeding from the Foley catheter occurred and systolic blood pressure decreased to 50 mm Hg; hence, she underwent urgent operation. A midline incision



**Figure 2.** Pseudoaneurysm was fed through a branch of the middle segmental artery.



**Figure 3.** Postembolization angiography showed successful occlusion of the arterial malformation.

was made, and left nephrectomy was performed. After re-operation, hematuria subsided and she was discharged in good condition. A 2-month follow-up showed no signs of morbidity. The final pathology report established the diagnosis of renal cell carcinoma (T1aN0M0).

## DISCUSSION

The reported incidence of renal artery pseudoaneurysm after a laparoscopic partial nephrectomy is 1% to 2%, while this rate is less than 0.5% for open partial nephrectomy.<sup>(2,5,6)</sup> It seems, however, there are no significant differences between these two procedures. Gross hematuria and flank pain are the most prominent symptoms that raise the suspicion of vascular malformation occurring most frequently within the 3 weeks after the operation.<sup>(5)</sup> Management of renal artery pseudoaneurysm is a challenging issue, and a variety of treatment modalities, such as conservative therapy and selective angio-embolization, have been exploited so far. Albani and Novick showed a successful conservative treatment of a pseudoaneurysm detected incidentally,<sup>(2)</sup> but several studies have revealed that selective coil embolization is the ideal alternative with high success rates and low complications.<sup>(7,8)</sup> There are very few case

reports on arteriovenous fistula developed after laparoscopic partial nephrectomy that were treated through selective angio-embolization with subsequent subsidence of gross hematuria.<sup>(3,4)</sup> Nonetheless, by presenting this case, we aimed to raise the issue for endourologists to pay more attention to this problem. Therefore, a close follow-up of the patient, even after a successful treatment confirmed by postembolization imaging, seems to be crucial to avoid a sudden rupture of the vascular malformation that may end up with a disaster.

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### CONFLICT OF INTEREST

None declared.

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