

## Oncology

## A case of acute bleeding from a small, asymptomatic renal angiomyolipoma (AML) during pneumoperitoneum induction for a rectal tumor resulting in acute hematuria and anemia

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## ABSTRACT

Angiomyolipoma (AML) is a benign renal mesenchymal tumor. Active surveillance is considered the most appropriate option for most AMLs. The major complication of AML is its spontaneous bleeding in the retroperitoneum that could be life-threatening for the patient. In this case, acute bleeding from a sporadic AML was reported immediately after the induction of a 12 mmHg pneumoperitoneum during a planned laparoscopic resection of the rectum for oncological reasons. After immediate stabilization the patient underwent angiography of the renal artery and super-selective vascular embolization. Although rare, spontaneous rupture of asymptomatic AML should always be considered, especially in intraoperative setting.

## Introduction

Angiomyolipoma (AML) is usually a noninvasive tumor and does not result in metastasis. The major interest in urological field is its capacity to cause hemorrhage.<sup>1</sup> The tumor contains mature fat cells, smooth muscle cells and vascular tissue in various proportions.<sup>1</sup> Only a few percentage of people develop a sporadic AML (0.13%). These are typically solitary, smaller than 4 cm and asymptomatic and can be managed by active surveillance. Tumors > 4cm will usually have an increased risk of spontaneous bleeding.

## Case presentation

We present a case of a 75 year-old Caucasian woman, presenting to the emergency room with abdominal pain which was initially treated by the primary care physician with antibiotics. Past medical history was notable for type II diabetes and hypertension. Surgical history notable for previous appendectomy and open bilateral ovariectomy. The patient underwent a colonoscopy which showed a rectal neoplasm. CT scan (Fig. 1) confirmed the diagnosis but also showed an incidental 28mm angiomyolipoma in the left kidney. Subsequently, the patient underwent diagnostic laparoscopy with plan for a laparoscopic low anterior resection of rectum. After the Veress needle placement in left

hypochondrium, the pneumoperitoneum was induced at 12 mmHg and then a 12 mm supraumbilical trocar was placed. On insufflation of the abdomen with the pneumoperitoneum at 12 mmHg the patient became acutely hypotensive and developed gross hematuria visible in the indwelling foley catheter. The insufflation was stopped and urologist was immediately consulted. After insertion of a 3-way catheter, manual irrigation was ineffective. A cystoscopy with clot evacuation was performed showing normal bladder wall and active bleeding from the left ureteral orifice. Once the patient was stabilized, urgent abdomen CT scan showed an active bleeding from an interlobular artery from the AML, with the appearance of a laceration between the healthy parenchyma and the lesion. Hemoglobin decreased to 7mg/dl requiring a transfusion of 4 units of blood. Emergent angiography of the left renal artery confirmed the contrast extravasation from the AML (Fig. 2). Successful hemostasis was achieved by immediate super-selective embolization with stainless coils, as described in the literature.<sup>1</sup> (Fig. 3). After 3 days the patient underwent a laparoscopic low anterior resection with primary re-anastomosis without any complications for a pT3a pN1 tumor. Currently the patient is undergoing chemotherapy with capecitabine and is asymptomatic. A renal ultrasound, performed 3 months later, showed a reduction in the AML to 2 cm with normal renal perfusion.

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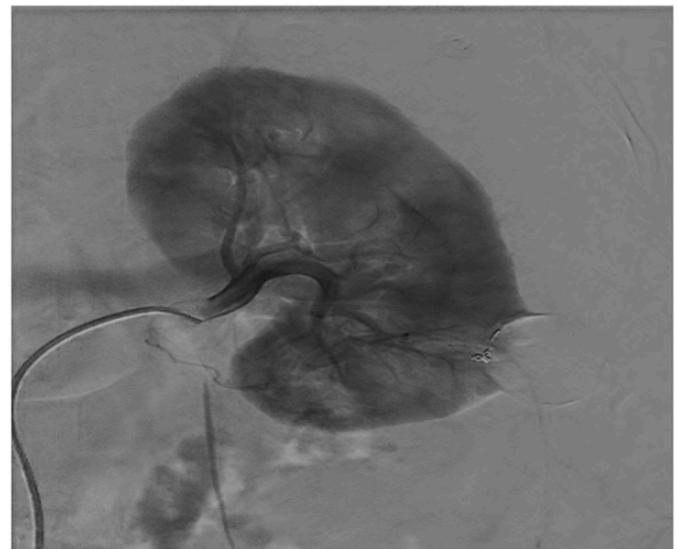
**Fig. 1. Abdominal CT scan.** Pre-operative CT scan showing incidental angiomyolipoma of the left kidney. Mean HU was 48, maximum diameter was 28.49 mm.



**Fig. 2. Angiographic study.** The angiographic study of the kidney showed active bleeding from an interlobular artery from the angiomyolipoma.

## Discussion

The indications for treatment of asymptomatic AML are controversial.<sup>1</sup> These usually include severe hemorrhage, size > 4cm, suspicion of malignancy, intractable pain or gross hematuria.<sup>2</sup> According to European Association of Urology guidelines active surveillance is generally the most appropriate management strategy for most AMLs, except for those > of 4–5 cm in diameter. Investigated risk factor for AML rupture are dimension, intratumoral aneurysms >5mm, genetic alteration, pregnancy and precipitating conditions like trauma, even blunt and low-velocity force.<sup>3</sup> We presented a case of an asymptomatic AML of the kidney, smaller than 4 cm, that resulted in an acute hemorrhage. The patient had no prior episodes of hematuria. Upon consultation our initial hypothesis was bladder injury secondary to trocar placement. Due to the



**Fig. 3. Embolization.** Final image of the angiographic study showing successful treatment of the bleeding by super-selective embolization with stainless coils.

size of the AML this was not considered a possibility. *Qin et AL* reported a study investigating the possibility of super-selective artery embolization of AML before partial nephrectomy in order to reduce morbidity and mortality during resection, especially for diameter >7 cm.<sup>4</sup> In our approach the patient underwent super-selective artery embolization in order to successfully treat acute bleeding, as the clinical practice suggests.<sup>5</sup> With our approach, 3 days after embolization she was able to complete a laparoscopic low anterior resection with primary re-anastomosis without any complications. Pubmed search revealed no similar reports and we believe this case argues for more careful assessment of asymptomatic benign renal neoplasms prior to laparoscopic abdominal surgery. In this case it is likely that the increase in intra-abdominal pressure on insufflation resulted in spontaneous renal injury. In smaller community hospitals the patient may not have fared as well. If emergent imaging and embolization were not readily available she would have required either emergent transfer to a tertiary facility or more invasive management which may have resulted in a nephrectomy and increased her risk of morbidity and mortality. With our approach, the patient was able to complete the planned surgery without substantial delay.

## Conclusion

In conclusion, clinicians should be alert to intraoperative rupture of renal AML, even if the tumor is asymptomatic and lower than 4 cm. It is essential to plan the correct and time-effective diagnostic and therapeutic strategy: in our case the visualization of lateralized hematuria was the key. Moreover, CT scan is helpful for accurate diagnosis. Emergent transcatheter arterial embolism is a useful and non-invasive management method for immediate hemostasis.

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### Abbreviations

AML: angiomyolipoma  
CT: computer tomography