



# A unique case of chromophobe renal cell carcinoma seeding after biopsy

Victor Sandoval, Daniel Halstuch, Melissa Huynh, Nicholas Power\*

Department of Surgery, Urology Division, Schulich School of Medicine and Dentistry, University of Western Ontario, London, ON N6A 5W9, Canada

## ABSTRACT

We report a unique case for a 1.5 cm Chromophobe Renal Cell Carcinoma (ChRCC) tumor recurrence on the posterior abdominal wall along the renal tumor biopsy tract. This case presented on follow up at 4.5 years after radical nephrectomy T1bN0M0. Pathology was confirmed to be a chRCC with later excision of the mass. We believe the recurrence in this case is due to tumor seeding after multiple Renal Tumor biopsies (RTB) performed before surgery, as the tumor was located along the RTB tract.

## 1. Introduction

The widespread use of cross-sectional imaging has led to an increase in the incidental detection of small renal masses (SRM), defined as <4 cm in diameter. Although the majority of SRM are malignant, most are indolent (low grade with a low risk of progression). Renal tumor biopsy (RTB) is a diagnostic test used to sample a suspicious mass in the kidney and should be considered in patients with a renal mass when the result of the biopsy will alter their management. RTB is usually performed percutaneously, and during the procedure the needle passes through the skin, subcutaneous fat, posterior abdominal wall musculature, and Gerota's fascia before penetrating the renal tumor. Using a coaxial sheath allows multiple needle passages without creating extra tracts, thus potentially reducing the risk of tumor seeding. Although anecdotal, tumor seeding has been published in the literature. Macklin et al.,<sup>1</sup> reports seven cases with histologic evidence of tumor seeding within the perinephric fat following surgical resection of the mass. Although they did not identify any specific technique that could predict tumor seeding in their cases, six of them were papillary RCC (pRCC) and one was clear cell RCC (ccRCC). Of the seven patients with tumour seeding, one patient subsequently developed a local recurrence within the renal bed at a site consistent with the biopsy tract. Several studies have reported similar findings or tumor seedings on the abdominal wall, psoas muscle or along the RTB several years after surgery.<sup>2</sup> As the utilization of RTB in clinical practice is increasing, it is likely that more cases of tumor seeding will be reported in the future. Herein, we describe one case of tumor recurrence following radical nephrectomy in a patient that underwent two biopsies with multiple tumor samplings prior to surgery.

## 2. Case presentation

A 62-year-old male with a past history of chromophobe RCC (chRCC) presented to the urology clinic. Five years ago, the patient was diagnosed with a 4.5 cm left renal mass. A fine needle percutaneous biopsy was performed with an inconclusive finding of chRCC versus oncocytoma. A second percutaneous biopsy was done with findings suggesting chRCC and the patient underwent a left laparoscopic nephrectomy with an uneventful postoperative course. The final pathology was chRCC, eosinophilic variant pT1bNxM0. The tumor was confined to the kidney with negative margins. The patient was followed according to CUA guidelines. Four and a half years after the initial biopsy, on a follow-up ultrasound a 1.7cm lesion was noted in the left posterior abdominal wall along the biopsy tract (Fig. 1).

Subsequent CT of the abdomen and pelvis confirmed the same findings with a negative metastatic workup distantly. The lesion was confirmed by biopsy (20-G needle with a 19-g coaxial sheath) to be a recurrent chRCC. The patient was referred to our centre and underwent surgery with open excision of the lesion from the posterior abdominal wall. Final morphologic and immunophenotypic features were consistent with chRCC, eosinophilic type (Fig. 2.).

## 3. Discussion

In contemporary literature, several case studies and small series have reported on histologically proven RTB tract seeding.<sup>3,4</sup> Most of these cases were ccRCC and pRCC. We present a unique case of tumor cell seeding of chRCC following two RTBs prior to radical nephrectomy, as tumor characteristics were not clear if malignant or benign.

\* Corresponding author.

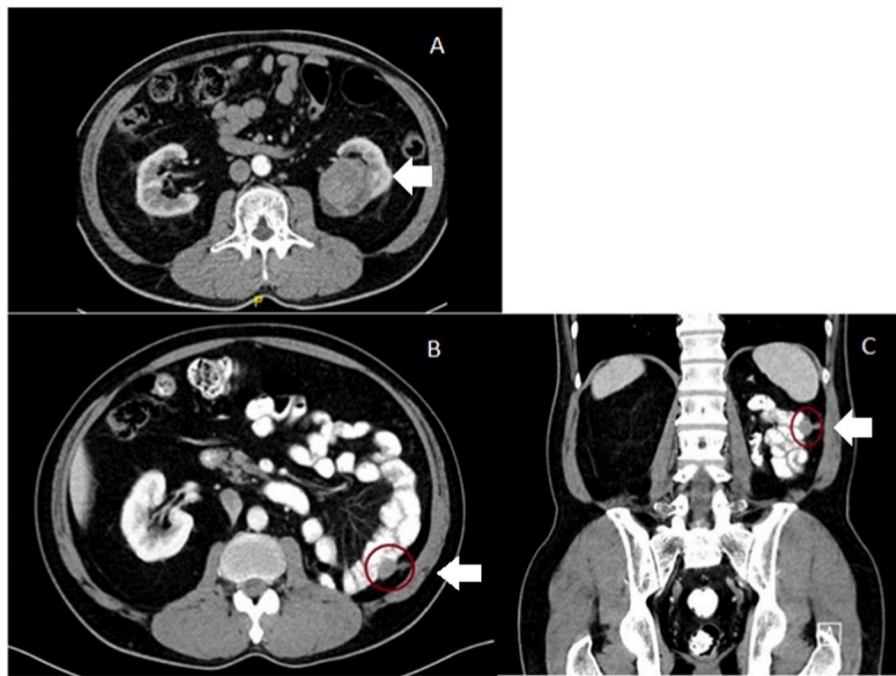
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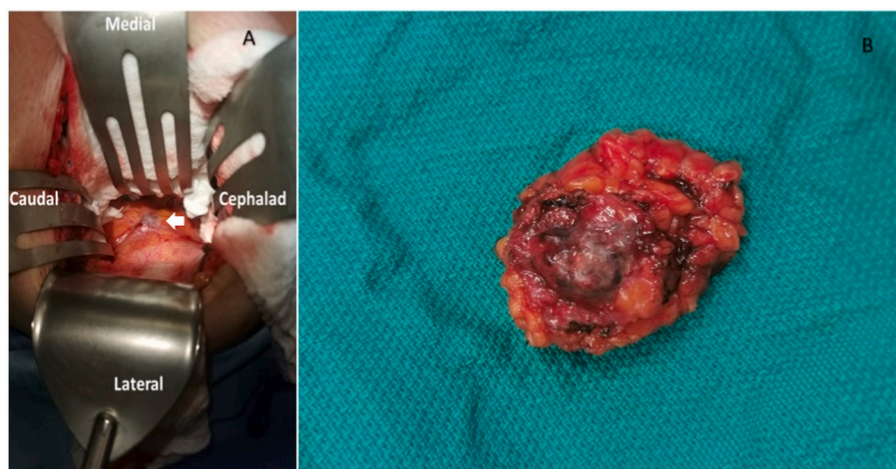
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**Fig. 1.** A. CT axial view of the left renal mass at diagnosis. B. CT axial view of the tumor recurrence. C. CT coronal view of the tumor recurrence in retroperitoneum.



**Fig. 2.** A. Intraoperative findings - a 1.5 cm tumor located in the left retroperitoneal fat (white arrow) adjacent to the descending colon, small bowel loops are reflected medially B. Macroscopic appearance of the resected specimen.

The risk for tumor seeding after renal biopsies is very rare with an incidence estimate of less than 1 in 10,000 cases of biopsies.<sup>1</sup> This historical estimate was based on responses to questionnaires from multiple institutions. The first case of RTB seeding was described in 1977 by Bush et al. Since then, only 27 cases of tumor seeding have been reported in the literature. Current guidelines and studies from centers of excellence suggest performing RTB to characterize the histology of radiologically indeterminate small renal lesions. Although rare and still mainly anecdotal, the increasing utilization of RTB to characterize SRMs has the potential to increase the occurrence of malignant tumor seeding of the biopsy tract.<sup>1</sup> Macklin et al. reported on the largest series of histopathological tumour seeding with seven cases (1.2%) of all patients that underwent RTB before surgery, of which one developed local recurrence.<sup>1</sup> In a similar study, Zhou et al. examined 98 cases who had both an RTB and underwent nephrectomy, of which six patients (6%) had pathological needle tract tumour seeding within the perinephric adipose; nevertheless, no patient in this cohort developed a classic local

recurrence along the needle tract biopsy.<sup>4</sup> According to published literature, most recurrences following RTB are located in the perinephric fat and posterior abdominal wall with ccRCC and pRCC as the most common reported histopathologies. To the best of our knowledge, no cases of chRCC needle tract seeding have been reported. This should not come as a surprise, given the relatively lower incidence of chRCC compared to ccRCC and pRCC.

Jacob et al. in 2015 recently published a study that characterized the histological interface of the peritumoral pseudocapsule and the normal renal parenchyma. Interestingly, they found that 77% of ccRCC had a complete pseudocapsule vs. only 28% of chRCC.<sup>5</sup> Whether the higher rate of histologically incomplete or absent pseudocapsule of chRCC subtype facilitates tumor cell spreading along the needle tract is yet to be determined. Proper biopsy technique is thought to have an important role in preventing needle tract seeding. Contemporary studies report usage of an 18-gauge needle with the coaxial sheath technique.<sup>1</sup> Our case report, along with other reports in contemporary literature,

challenges the notion that the usage of coaxial sheath prevents the spread of tumor along the biopsy tract. As there are no guidelines to address surveillance for tumor seeding following RTB, clinicians should be aware of this entity. Larger studies and long-term follow-up following RTB should be reported.

#### 4. Conclusion

Currently the increased trend of RTB for RCC treatment may cause a potential rise in the incidence of tumor tract seeding. Although largely an anecdotal event, reporting of similar cases should be encouraged to raise awareness of the actual risk for this procedure, particularly for ccRCC and pRCC.

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