

## Case Report

# Nephrectomy for No Metastatic Renal Cell Carcinoma with Venous Tumor Thrombus About One Case and Literature Review

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**Abstract:** *Introduction:* Extended total nephrectomy (ENT) is the treatment for localized or locally advanced renal cancer with vena cava tumor thrombus. The existence of a vena cava thrombus imposes a vascular surgery time which increases the intraoperative mortality and morbidity. *Purpose:* the purpose of this clinical case and to evaluate our surgical management of non-metastatic renal cancer with subdiaphragmatic vena cava thrombus. *Observation:* This was a 63-year-old patient who had presented disabling right low back pain associated with macroscopic haematuria no signs of deglobulization on biological examination. The morphological assessment was carried out using an abdominal computed tomography, which revealed a right kidney tumor classified as T3bN1. A tumor extension assessment by thoracic computed tomography was performed afterwards. There were no remote secondary lesions (M0). After CPR discussion, we performed ENT with lymph node dissection associated with inferior vena cava thrombectomy. The post-operative follow-up had been simple. Controls were carried out at 1 month then every 6 months for 1 year and every year for 5 years. There was no local, loco regional or distant recurrence. *Conclusion:* Kidney cancer with non-metastatic vena cava thrombus represents a locally advanced form whose surgical management must be well assessed, in terms of the increased risk of perioperative morbidity and mortality.

**Keywords:** Renal Carcinoma, Venous Thrombus, Extended Total Nephrectomy

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## 1. Introduction

Radical total nephrectomy is the validated reference treatment for localized and locally advanced kidney cancer [1]. The existence of a tumoral venous thrombus makes surgery complex, and requires a good radiological evaluation beforehand, to establish an appropriate surgical strategy [1, 2].

The level of the thrombus conditions the prognosis and the degree of surgical comorbidity. Its excision improves overall survival [1, 3, 4]. We present here a case of management of locally advanced renal carcinoma with renal vein thrombus and IVC.

## 2. Clinical Case

63-year-old patient, followed since March 2016, with no comorbidity, ECOG score 0, who had presented disabling right low back pain associated with macroscopic haematuria. A computed tomography of the urinary tree (URO CT) revealed a renal mass 11 cm long, mid-renal, heterogeneous, vascularized with locoregional adenopathy, associated with a tumoral thrombus of the right renal vein, which extended into the inferior vena cava (IVC), over 2cm (Figure 1). This tumor was classified as T3bN1M0 according to the AJCC TNM 2017 classification. The extension assessment by thoraco-abdomino-pelvic CT scan did not find any secondary locations. The surgical indication had been retained after decision of the Multidisciplinary Consultation Meeting (MCM). We performed an ENT with thrombectomy and

lymph node dissection. The operation was performed under general open anesthesia. The approach was abdominal with a wide right subcostal incision. The first stage was that of thrombectomy after vascular control of the right renal pedicle and the upstream and downstream vena cava (Figure 3). Then the second stage was that of ENT with regional lymph node dissection. The suites were simple. Histological analysis of the surgical specimen and the thrombus confirms the diagnosis of Fuhrman grade 3 clear cell carcinoma, with tumoral thrombus, and healthy surgical margins, with three out of five positive lymph nodes. This tumor had been classified postoperatively at intermediate risk of metastatic progression according to UISS. Monitoring at 1 month then every 6 months by tomodentometry and monitoring of renal function, for 1 year, then every year for 5 years. We found no signs of local, locoregional or distant recurrence.

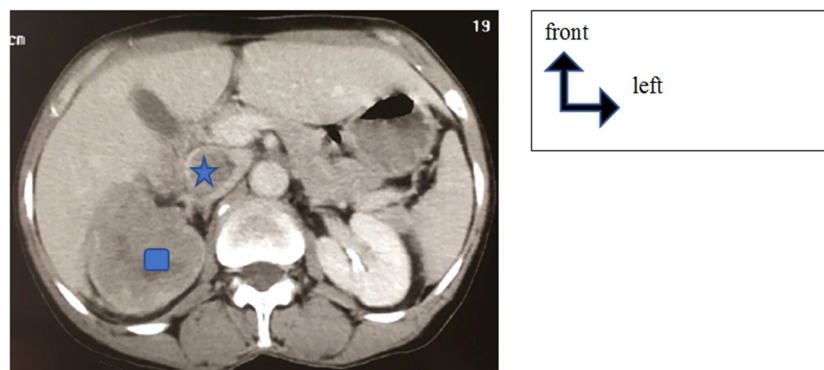


Figure 1. Renal tumor , Venous Tumor Thrombus .

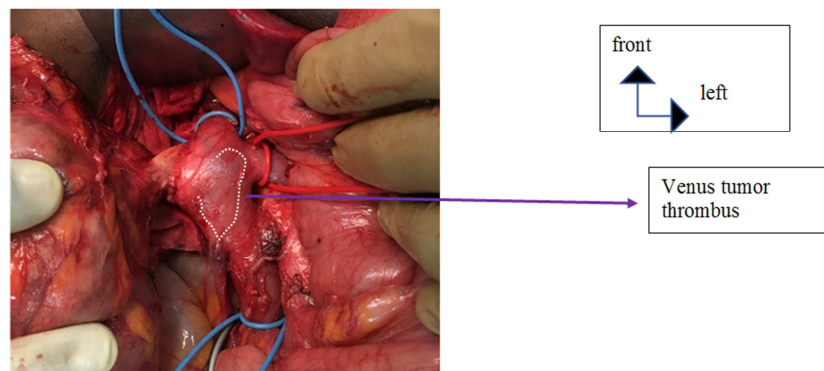


Figure 2. Vascular control.

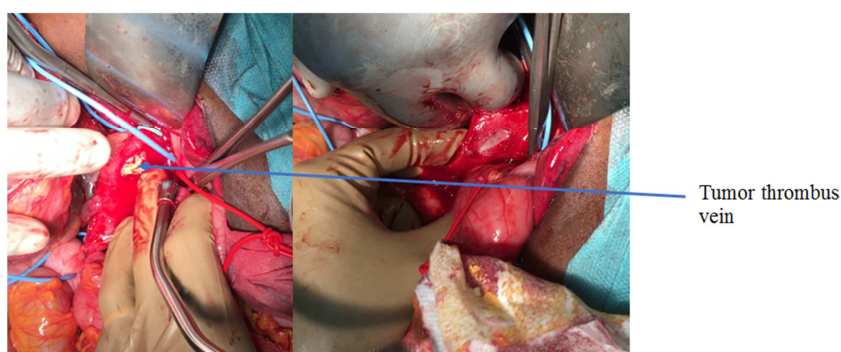


Figure 3. Extraction of thrombus tumoral.

### 3. Discussion

Renal cell carcinoma (RCC) is the third most common malignancy of the genitourinary tract. It is the most common upper tract tumor with tumor thrombus extension into the renal vein and into the inferior vena cava (IVC) [1]. The existence of a tumoral thrombus, more frequent on the right than on the left, is a sign of local extension, with the risk of metastatic dissemination. A tumor thrombus is detected in about 4-10% of patients with CRC. 30 to 50% of patients with tumor thrombus are metastatic [1, 2].

The diagnosis of renal tumor in our patient was made based on the etiological assessment of macroscopic hematuria, which is a major symptom of renal tumor widely described in the literature [1, 3, 5]. The thoracic and pelvic views made it possible to carry out the extension assessment. This tumor was classified as T3bN1M0.

The indication for surgery had been decided in the MCM meeting about the current recommendations [1]. However, an associated IVC thrombectomy would make this surgery more morbid [6, 7]. The evaluation of the level of the tumoral thrombus remains an important pre-surgical time because it makes it possible to anticipate the difficulties of the vascular gestures, to better organize the vascular time, and to evaluate the possibility of an extraction or not of the thrombus [6]. This assessment may contradict a thrombectomy, which would limit surgery to an ENT with a thrombus in place [7, 8]. Many authors have insisted on the pejorative character in terms of survival without local recurrence and without metastatic recurrence, of a thrombus left in place because of its adherent nature, or of a need for extensive vascular surgery, which would increase mortality. per operative [1, 9, 10]. MRI is the recommended examination for a better vascular evaluation, by assessing the ratios, the invasion of the venous wall, the extent of the thrombus [6, 11]. We were unable to perform this evaluation preoperatively due to lack of financial means, an intraoperative evaluation had been the chosen option.

We therefore performed an inferior vena cava thrombectomy then the ENT removing the latero cava lymph node chains.

To better adapt the management of these non-metastatic tumors with cava thrombus, many authors have proposed nomograms predicting the risk of progression, and even classifications according to the seat and level of the tumor thrombus below or above the diaphragm [1, 3, 11]. Data from various published studies clearly showed a clear difference in specific survival, recurrence-free survival, and overall survival depending on the level of the tumor thrombus (Figure 4) [11]. The farther the level of the tumor thrombus is from the renal vein, the more the results are pejorative and the surgery much more difficult [1, 11].

Oncological surgery with tumor thrombus of the IVC must be as wide as possible by going into the healthy margin, it offers 5-year survival rates varying from 50% to 65% [1]. When ENT is performed without thrombectomy, the

prognosis is extremely poor, with mortality rates of 70% [1, 2, 12]. This subdiaphragmatic thrombectomy is feasible in our countries by a urologist surgery, who can be assisted by a vascular surgeon. We had performed a thrombectomy, after checking upstream and downstream of the IVC and the left renal vein, the vascular gesture being considered short intraoperatively, we performed a digital clamping of about six minutes. This allowed the extraction of the tumoral thrombus, not adhering to the venous walls. The vascular time under these conditions must be as short as possible to limit the duration of the clamping of the IVC. Sometimes this vascular time can turn into real heavy surgery, requiring cave replacements, CECs, bypasses, sometimes limiting the possibilities of excision in our structures. Hence the importance of a good preoperative radiological evaluation [4, 11, 13].

The histological analysis made it possible to have other prognostic elements, such as the anatomopathological type, the Fuhrman grade, the surgical margins, the status of lymph node dissection [1, 14]. Our patient had poor pre and postoperative prognosis criteria, thrombectomy is associated with mortality (5-15%) and high morbidity (35%-70%) which increase with the level of the thrombus [13].

Our tumor was classified as pT3b pN1M0, a Fuhrman grade 3, three positive lymph nodes. These factors are the same found in the literature for these tumor groups, locally advanced with a very high risk of metastatic spread [1, 2, 14]. This tumor had been classified as having an intermediate prognosis according to UISS. No argument for adjuvant treatment.

Most of the randomized studies that have studied the benefit of adjuvant treatment with antiangiogenics in patients at high risk of recurrence after nephrectomy have reported negative results, others are in progress [13, 14, 15]. Only the S-TRAC study, which assessed the benefit of treatment with sunitinib in patients at high risk of recurrence, showed an increase in recurrence-free survival but without an increase in overall survival in the group treated with sunitinib. The update of the Keynote study at 30 months by Choueiri T, suggests an overall survival benefit in these patients with the use of pembrolizumab, but many authors are awaiting the updated longer-term analyzes [16].

The long-term survival of patients in whom total ablation was performed seemed significantly better than that of those whose resection (tumor or thrombus) was incomplete. Five-year survival rates for renal tumors progressing to the renal vein or IVC exceeded 50% [11, 15]. This survival rate decreases as the level of the venous tumor thrombus was high [1, 11].

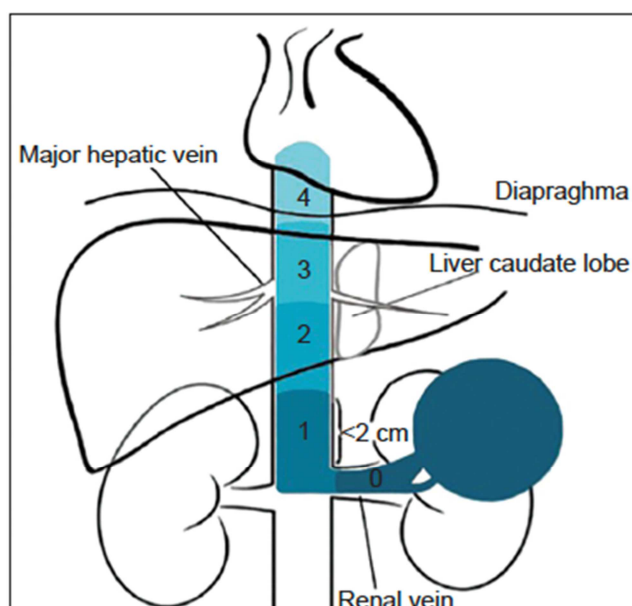
In addition to tumor-specific characteristics, there was a significant risk of peri-operative morbidity, such as profuse blood loss, requiring major blood transfusion, prolonged hospital stay rate of up to 70%, and a postoperative mortality rate of up to 48% [11].

Hence the essential interest of a good evaluation of the tumoral thrombus, and of a confrontation with the

comorbidities of the patients at the time of selection [10, 11]. Vascular surgery must be as safe as possible, especially in our countries where the technical platform is sometimes limited.

## 4. Conclusion

ENT with ICV thrombectomy remains the curative treatment for locally advanced non-metastatic renal cell carcinoma with subdiaphragmatic cava thrombus. The level of the thrombus has a prognostic value on the specific survival and on the overall survival. MRI provides good clinical and therapeutic evaluation. This surgery is feasible subject to a good preoperative evaluation.



**Figure 4.** Classification of tumor thrombus site, 4 levels according to the Mayo Clinic staging system. [11].

## Abbreviations

URO-CT: Uroscanner  
 CT TAP: Thoraco – Abdomino – Pelvic Computed Tomography  
 MCM: Multidisciplinary Consultation Meeting  
 ECOG: Eastern Cooperative Oncology Group  
 UISS: Ucla Integrated Staging System  
 CEC: Extracorporeal Circulation  
 CCAFU: Cancerology Committee of the French Association of Urology.

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