

# Renal Cell Carcinoma with Inferior Venecaval Thrombus

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## ABSTRACT

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Renal cell carcinoma is a solid tumour of the kidney with a unique propensity to grow into the renal vein and the inferior venecava. This tumour has an insidious clinical course initially and hence 2/3rd cases are still detected in advanced stages. Surgery is often having higher degree of difficulty and risk in these patients and have higher incidence of untoward events. This is seen to produce poor results in spite of prompt clinical measures. This article reports the clinical course of a 57 year old male patient with an insidious presentation of renal mass in an advanced stage with thrombus in the inferior venecava.

**Keywords:** CPB (cardiopulmonary bypass), CSS (cancer specific survival), HCA (hypothermic circulatory arrest), IVC (inferior vena cava), MRI (magnetic resonance imaging), OS (overall survival), RCC (renal cell carcinoma), VTT (inferior venacaval tumor thrombus), CFS-(cancer free survival)

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## INTRODUCTION

Renal cell carcinoma (RCC) is a common solid tumor of the urinary system, and its incidence tends to rise year by year. It has been reported that approximately 4%–10% patients with Renal cell carcinoma were found to have venous tumor thrombus on diagnosis of the cancer.<sup>1</sup> The presence of venous thrombus tumor increases the complexity of management due to associated parasitizing vessel and potential for embolization. However radical nephrectomy with tumor thrombectomy remains the mainstay of treatment for these patients. On the other hand, the 5-year cancer-specific survival (CSS) is a mere 25%–65% following surgical resection.<sup>2</sup>

## CASE REPORT

A 57 yrs old gentlemen presented with fever with chills of 2 weeks duration, vomiting, loss of weight, loss of appetite, hematuria with clots, known history of Hypertension, Diabetes Mellitus, Chronic Obstructive Pulmonary Disease and history of smoking.

On Examination pallor was seen. Abdominal examination revealed left side tenderness and left side varicocele of grade 2

Ultrasound Abdomen (9/7/14) demonstrated bilateral enlarged kidneys with altered echo texture and hyper echoic lesion in mid pole of left kidney.

CT Scan Abdomen (13/7/14) described bilateral nonspecific perinephric fat stranding, enlarged left kidney with heterogeneous appearance with loss of normal architecture, small fluid density in lower pole leading to a provisional diagnosis of either complicated cyst or abscess.

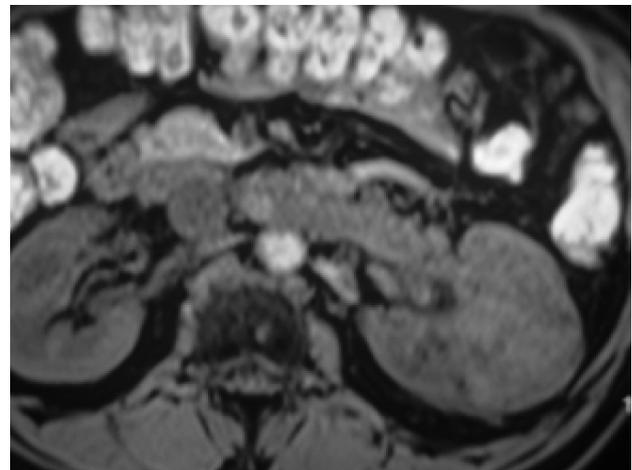


Figure 1. MRI showing Heterogeneous T2 hyperintense lesion involving interpolar and lower polar region with left renal vein thrombus extending to IVC.

MRI (28/7/14) performed showed a heterogeneous T2 hyperintense lesion involving interpolar and lower polar region with left Renal Vein thrombus extending to hepatic vein, Inferior Venecaval across the diaphragm.

After extensive discussions it was decided to attempt radical nephrectomy along with venous thrombus

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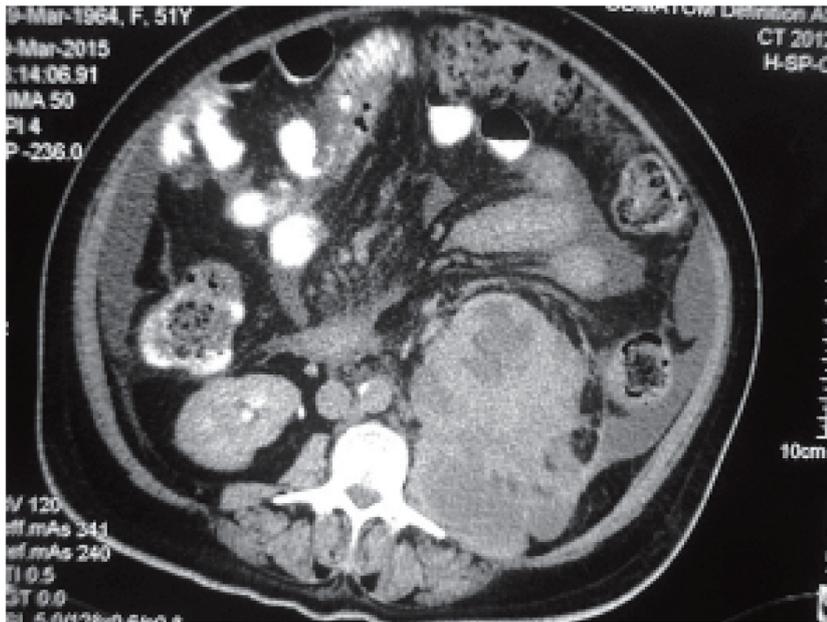


Figure 2. Emphysematous Pyelonephritis in Diabetic patient

removal with the help of cardio pulmonary support. With cardiovascular support the patient underwent left radical nephrectomy with sternotomy, cardiopulmonary bypass leading to venacaval tumor thrombectomy. The patient tolerated the procedure well.

In the post operative period the patient developed renal dysfunction not amounting to dialysis & he developed right deep vein thrombosis which was treated with enoxaparin. He was discharged in satisfactory condition and was on regular followup.



Figure 3. Calcified Seminal Vesicle

Histological examination was suggestive of clear cell type Renal cell carcinoma grade 2.

Later one month ago he complained of left side lower limb and back pain, but venous Doppler showed normal study. MRI showed air pocket in left renal fossa with collection suspicious of anaerobic abscess which was aspirated. Subsequently the patient died of cardiac problems surviving 8 months postoperatively.

## DISCUSSION

The only possible cure for Renal cell carcinoma with venous tumor thrombus is surgery. With advances in surgical technique and instrumentation,

the surgical indication for these cases has widened and surgical safety has been improved but remains challenging. Adam et al. showed that when patients with renal cell carcinoma and venous tumor thrombus did not undergo surgical treatment, their median and one year disease specific survival remains only 5 months and 29% respectively.

MRI currently remain the study of choice to evaluate the patients.<sup>3,4</sup> The role of embolization before nephrectomy with IVC thrombectomy is also controversial. Subramanian et al showed no benefit in intraoperative blood loss and in fact had more perioperative mortality.<sup>7</sup>

According to Neves & Zincke classification thrombus at the hepatic vein and below the diaphragm (level 3) and supradiaphragmatic or atrial venous tumor thrombus is Level 4. The management of level 3 thrombus is complicated by difficulty in exposing vena cava.<sup>5,6</sup> So techniques used in liver transplant have been described to facilitate resection of tumors. venous tumor thrombus extending above the diaphragm (level 4) is typically approached in conjunction with cardiothoracic surgeon using Cardio pulmonary bypass with and without Hypothermic circulatory arrest but this can produce platelet dysfunction and coagulopathy, resulting in bleeding from the extensive raw retroperitoneal surface. Intraoperative trans- esophageal echocardiography is recommended in case of level 3 & 4 to allow identification of thrombus.<sup>8,9</sup>

Regarding tumor thrombus, interruption of vena cava in the form of Greenfield filter placement or ligation may be required to prevent embolization of bland thrombus.<sup>10</sup> When inferior vena cava is segmentally

resected to clear tumor involvement, primary closure must ensure at least 50% of inferior vena cava lumen is maintained.<sup>11</sup>

The risk of perioperative complication increased from 25.7% (level 3), 46.9% (level 4) and blood loss, transfusion, hospital stay associated with level of thrombus.<sup>12,13,14</sup> Late complications included chronic kidney disease & proteinuria.

The 5 years CSS for patients with renal cell carcinoma with venous tumor thrombus after surgery in the absence of lymph node disease and distant metastasis is approx 60%,<sup>16,17,18</sup> 15-20% for patients with either of these features and 4% for those with nodal and distant disease. The presence of renal sinus or perinephric fat invasion has been associated with increased risk of death.<sup>19</sup> Role of preoperative systemic therapy for venous tumor thrombus is controversial. So a prospective randomized trial is needed to determine the role of neoadjuvant targeted therapy.

Local recurrence after Radical Nephrectomy occurs in 2-4% of cases, which include ipsilateral renal fossa, adrenal gland or lymph node involvement. In majority of patients with local recurrence, systemic disease is present. Surgical resection of isolated local recurrence will be difficult but can be considered because it can provide CFS for 30-40% of patients.

## CONCLUSION

Surgical intervention with resection of entire tumor burden is the mainstay of treatment and durable survival outcomes can be attained in patients with non metastatic disease.

## END NOTE

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**Conflict of Interest:** None declared

### Editorial Comments:

Renal Cell Carcinoma with extension into the venous system produces several new problems in the management. The surgical exercise is time consuming and needs attention to detail. The challenges are detailed in this case report.

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