



Objectives

To characterize the presence of bland (nontumor) thrombus in renal cell carcinoma with venous tumor thrombus and assess the impact of this finding on cancer-specific survival.

Methods

The clinical data of 153 cases of renal tumors with renal vein or IVC tumor thrombus from February 2015 to January 2017 were retrospectively analyzed. Finally, 123 cases with follow-up were included in the study. In 123 patients, 21 cases(17.1%) had bland (nontumor) thrombus, and 102 cases(82.9%) without presence of bland thrombus.

Results

These patients with bland thrombus were more likely to have longer operative time (416.76 ± 103.61 min vs. 314.86 ± 123.00 min, $P = 0.001$), more surgical bleeding volume (2738.10 ± 2238.41 ml vs. 1090.98 ± 1395.21 ml, $P = 0.004$), more surgical blood transfusion volume



Figure 1: 58-year-old male had right renal cell carcinoma with IVC tumor thrombus. Abdominal enhanced MRI (coronal position) showed the diameter of IVC was enlarged and tumor thrombus was seen in the lumen (red arrow). The range of IVC involvement was about 11.6 cm. Filling defect can be seen at the junction of renal vein to IVC and distal end of IVC, considering the possibility of bland thrombus (black arrow).



Figure 2: We chose Chevron incision. The peritoneum was incised along the Toldt line and the hepatic flexure of the colon and duodenum were pushed from the outside to the inside. Stopcock hook-pulling apparatus was used to expose the operative field of colon. The kidney and the hilar vessels were separated. Exposure of IVC and related vessels were needed: distal end of IVC, contralateral renal artery or vein, IVC proximal and distal end of IVC. The right renal vein and the middle and upper IVC were tumor thrombus. The distal end of IVC and bilateral common iliac vein and external iliac vein were bland thrombus.

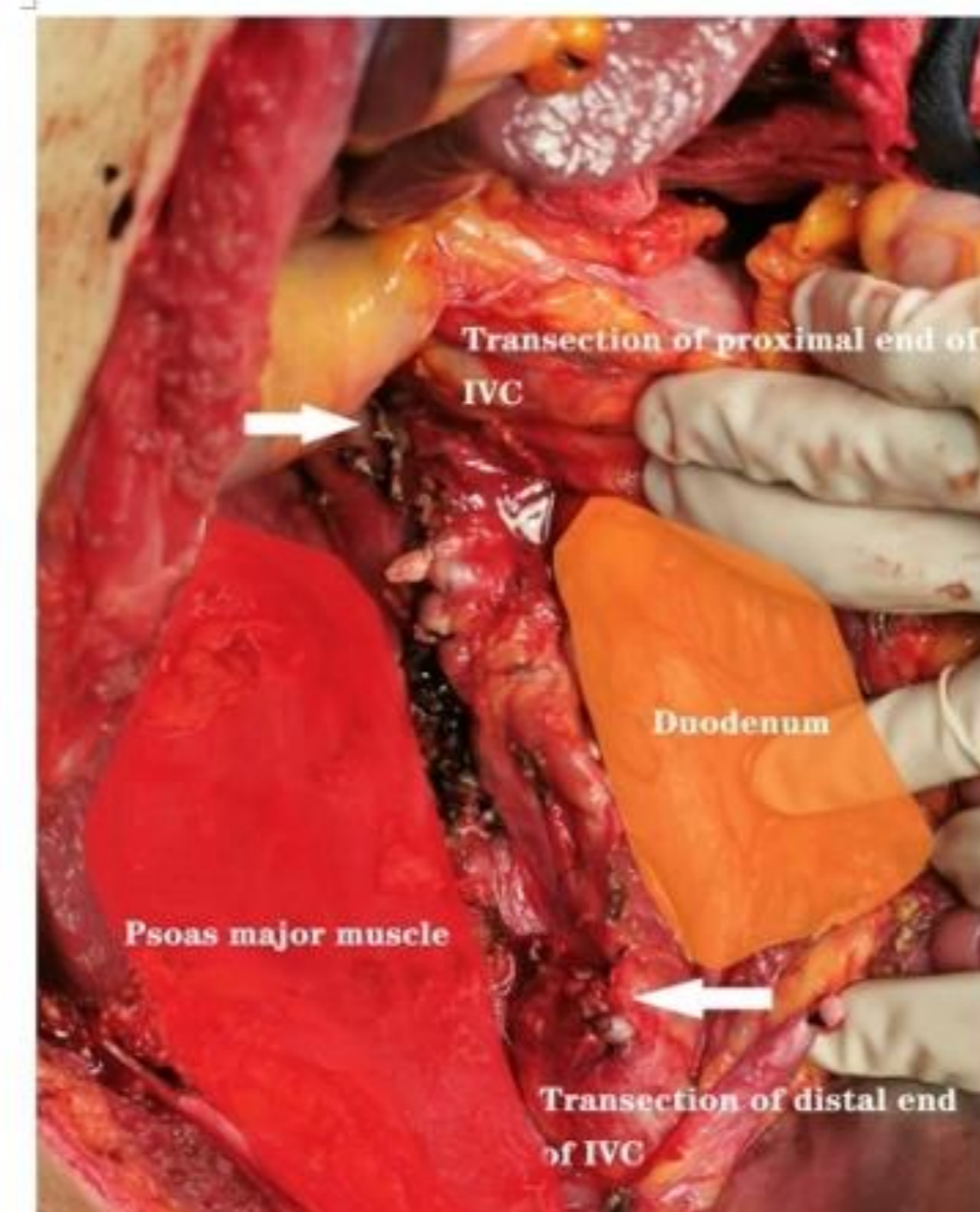


Figure 3: We exposed the IVC by fixing the duodenum to the inside of abdomen. The distal end of IVC, the contralateral renal vein and the proximal end of IVC were transected. The right kidney and the involved IVC and distal thrombus in the vascular lumen were removed completely.

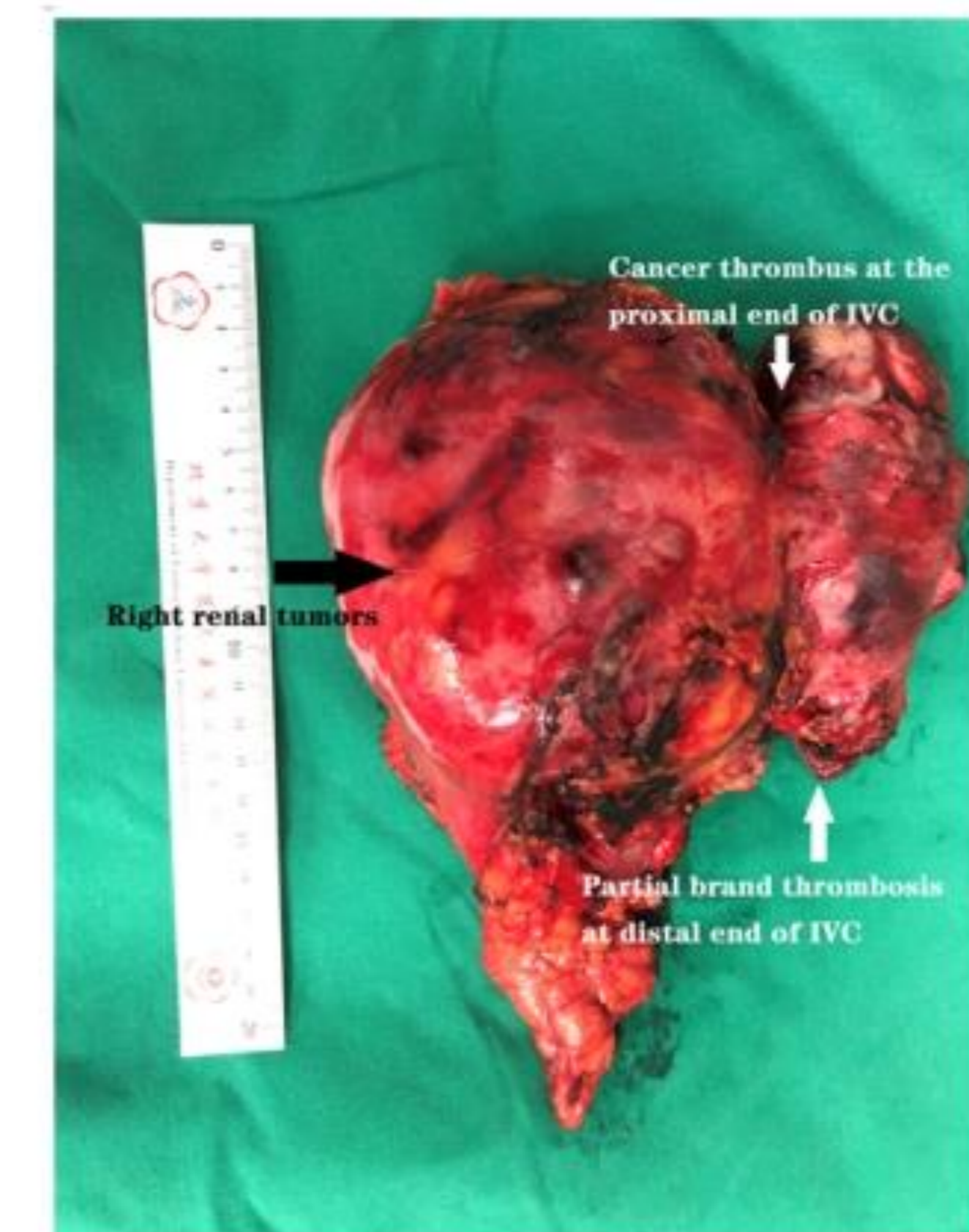
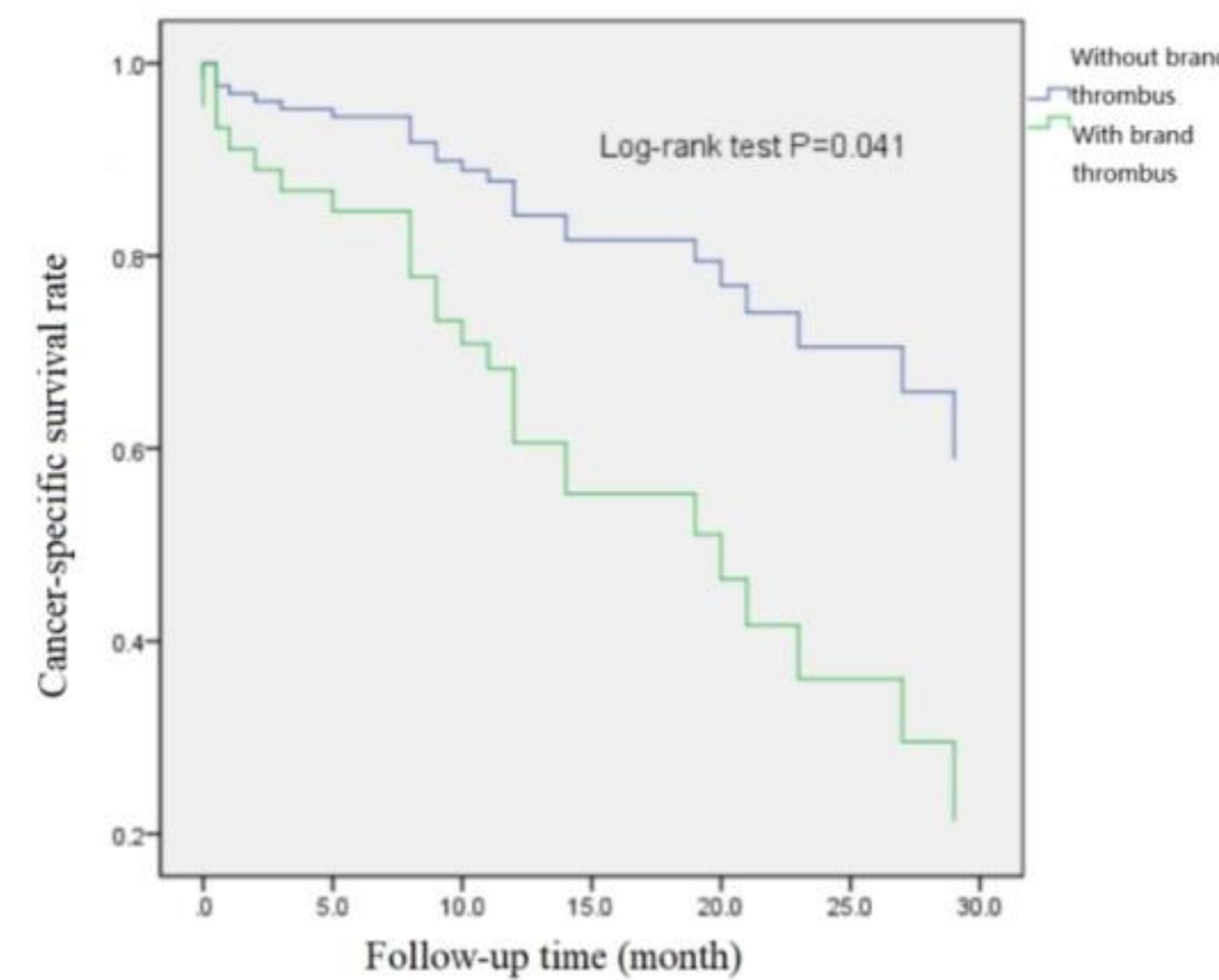


Figure 4: Postoperative gross specimens showed right renal tumor with IVC tumor thrombus, and some distal bland thrombus.



(1933.33 ± 2036.99 ml vs. 624.51 ± 926.87 ml, $P = 0.009$), more plasma transfusion volume (619.05 ± 831.64 ml vs. 171.57 ± 390.07 ml, $P = 0.025$), longer maximum width of tumor thrombus (32.29 ± 7.01 cm vs. 20.28 ± 8.94 cm, $P < 0.001$), longer width of tumor thrombus at the entrance of the renal vein (26.99 ± 4.47 ml vs. 17.86 ± 6.74 ml, $P < 0.001$), a higher percentage of open operative approach (81% vs. 47.1% , $P < 0.001$), a higher percentage of IVC

resection (42.9% vs. 9.8% , $P = 0.001$), and a higher percentage of postoperative complications (57.1% vs. 27.5% , $P = 0.011$) than patients without bland thrombus present. Analysis of cancer-specific survival (CSS) showed only distant metastasis ($P = 0.004$, $HR = 3.356$), sarcomatoid differentiation ($P < 0.001$, $HR = 6.875$), pathology type clear cell carcinoma ($P = 0.015$, $HR = 3.171$), alkaline phosphatase ($P = 0.029$, $HR = 2.543$) and presence of bland (nontumor) thrombus ($P = 0.007$, $HR = 3.323$) were independent predictors of prognosis. The estimated average CSS of Group A (No Bland Thrombus Present) was 31.7 ± 1.9 months, and average CSS of Group B (Bland Thrombus Present) was 18.8 ± 1.8 months. There was significant difference of CSS between the two groups ($P = 0.041$).

Conclusions

We explored several clinicopathological risk factors of predicting postoperative renal insufficiency in a large Chinese center. The renal function change after surgery was prognostic risk factors for CSS in RCC with tumor thrombus patients and $ACE > 13.9$ indicated the worse prognosis.