

Figure S1 Overall survival according to IMDC risk group and PS absence and sarcomatoid change. Patients with intermediate risk according to IMDC criteria but without PS or had sarcomatoid change had much poorer overall survival, comparable to those with unfavorable risk. PS, pseudocapsule; IMDC, international Metastatic RCC Database Consortium.

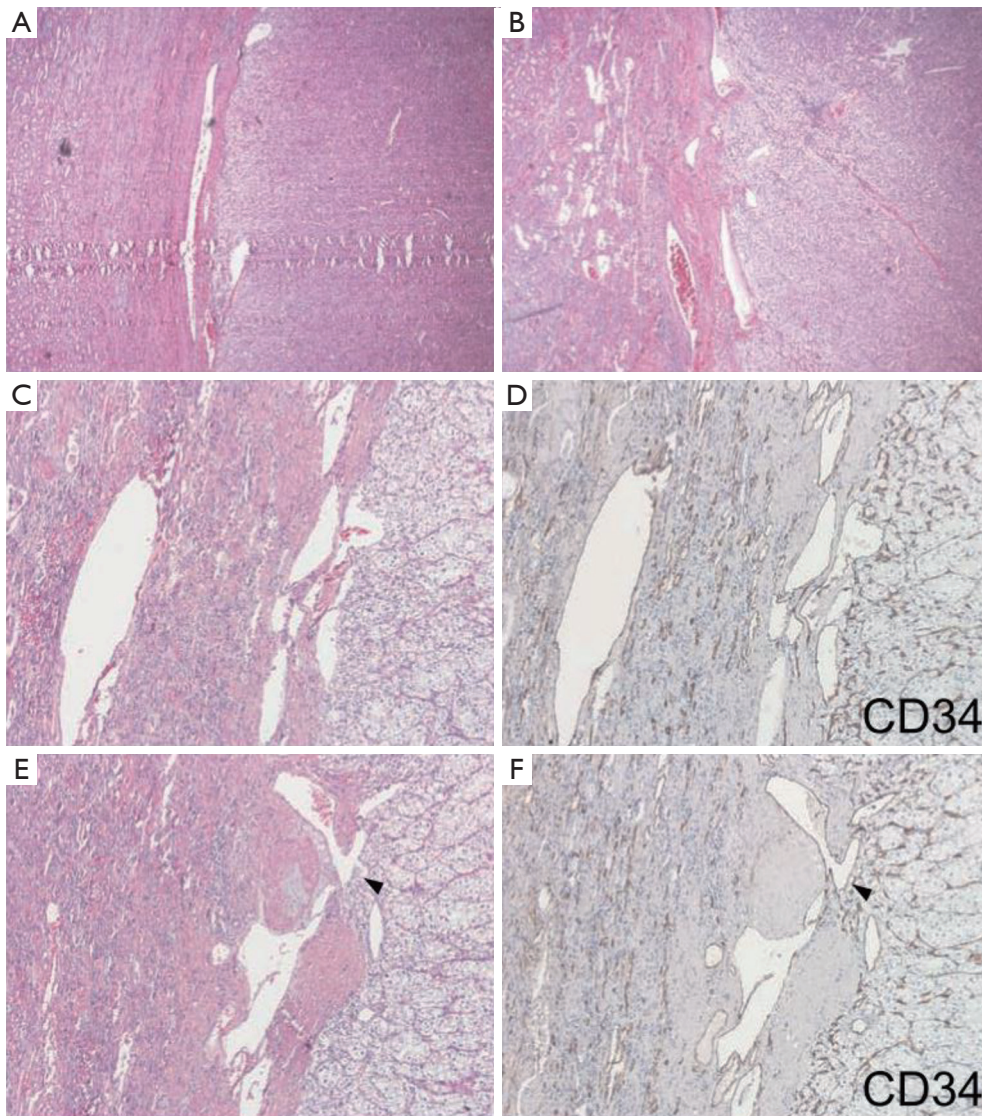


Figure S2 Representative pictures of vessels in PS. HE staining (A-C,E) and anti-CD34 staining (D,F) showed that PS contained more veins in large diameter (long diameter >100 μm). In many situations, cancer cells at the edge were only separated by a thin layer of endotheliocytes to those large vessels (black arrowhead) (hematoxylin-eosin and immunohistochemistry, original magnification $\times 40$). PS, pseudocapsule; HE, hematoxylin-eosin.

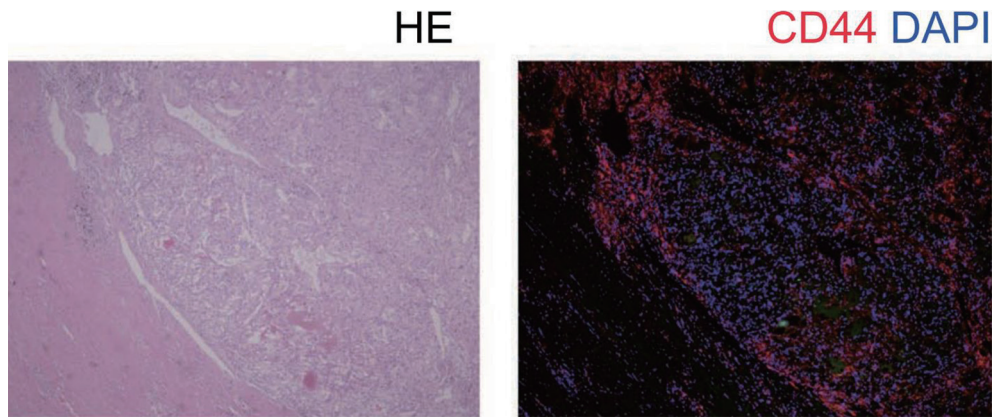


Figure S3 Representative pictures of CD44⁺ cancer cells surrounding PS. They mainly went along the boundary between PS and tumor and were further enriched surrounding large vessels (hematoxylin-eosin and immunofluorescence, original magnification $\times 40$). PS, pseudocapsule.

Table S1 Relation between PS status and TKI response

TKI response	Grade 0	Grade 1	Grade 2	Grade 3
PR	3/19 (15.8)	19/61 (30.0)	18/96 (19.6)	1/12 (8.3)
SD	10/19 (52.6)	29/61 (46.7)	49/96 (51.5)	7/12 (58.3)
PD	6/19 (31.6)	13/61 (23.3)	29/96 (28.9)	4/12 (33.3)

PS, pseudocapsule; TKI, tyrosine kinase inhibitors; PR, partial response; SD, stable disease; PD, progressive disease.