Renal cell carcinoma with direct colonic invasion

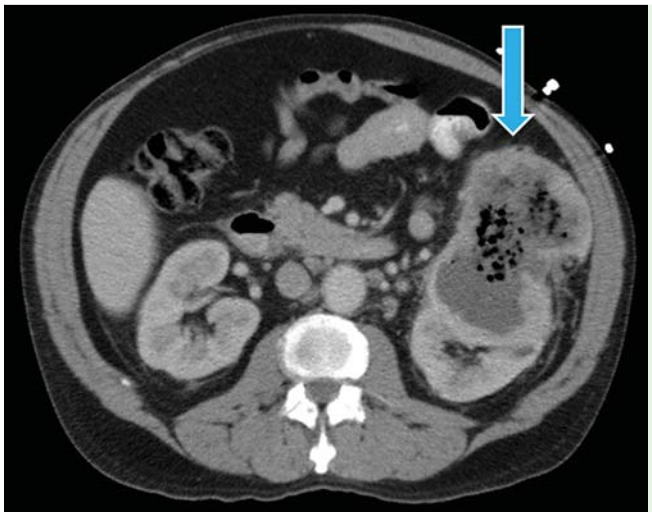
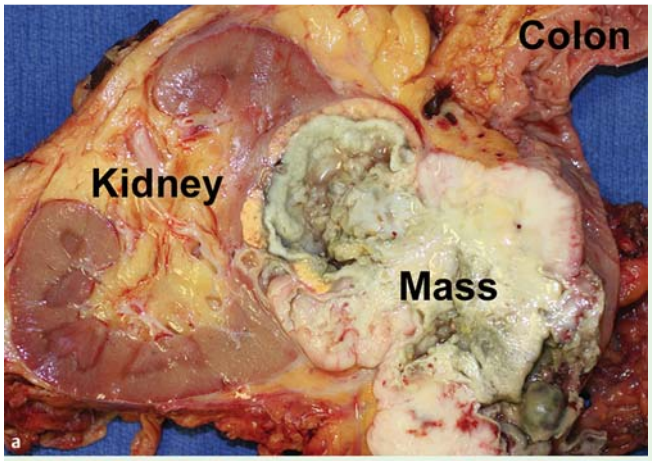


Fig. 1 Computed tomography (CT) image of a gigantic left kidney mass (arrow) invading the descending colon in a 53-year-old man with intermittent hematochezia and left flank pain. No pneumoperitoneum was noted.



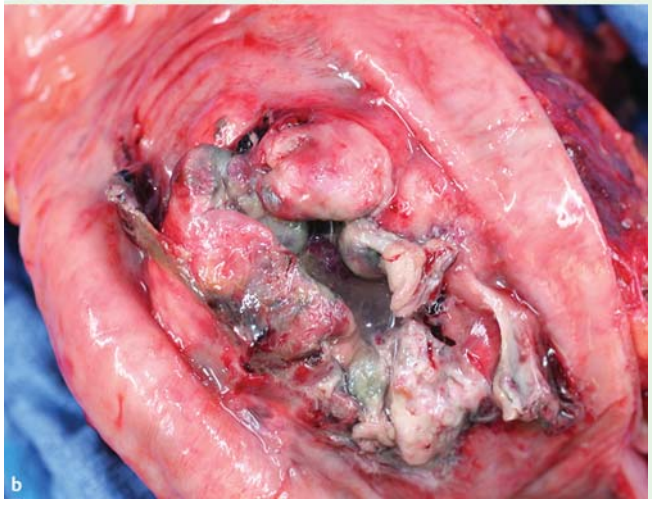


Fig. 3 Gross specimens, nephrectomy and partial colectomy. **a** A well-delineated, variegated tumor with extensive necrosis, arising in the renal parenchyma and invading the adherent colon. **b** Tumor invading through the colonic wall.

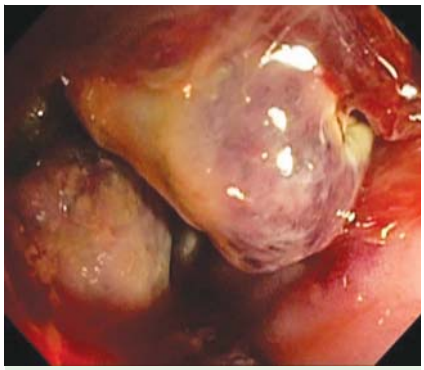


Fig. 2 Endoscopic image of the mass lesions in the colon.

Renal cell carcinoma (RCC) is a fairly uncommon malignancy, comprising only 3% of malignancies in adults [1]. Symptoms related to gastrointestinal involvement of this tumor rarely present, although up to 4% of patients with RCC have small-bowel metastases. Direct colonic invasion by RCC is extremely rare due to the retroperitoneal location of the kidneys and mesocolon. A thorough search of the English medical literature revealed only three reported cases of RCC with direct invasion into the colon [2–4]. Here, we present another case with a brief literature review.

A 53-year-old man presented with intermittent hematochezia and left flank pain. A computed tomographic (CT) scan of the abdomen revealed a 7-cm, left renal mass extending into the descending colon, with suspected fistulous communication (▶ **Fig. 1**). Colonoscopy revealed significant luminal narrowing in the proximal descending colon with multiple, friable mass lesions (▶ **Fig. 2** and ▶ **Video 1**). Biopsy specimens showed a poorly differentiated carcinoma, lacking both glandular and squamous features. Immunohistochemical analysis revealed tumor cells with marked reactivity for cytokeratin AE1/AE3 and vimentin stains. Scattered S100-positive cells were interspersed among the tumor cells.

Video 1

Endoscopic view of the renal cell carcinoma invading the descending colon.

Table 1 Summary review of published case reports of renal cell carcinoma (RCC) with direct colonic invasion.

Case report	Tumor size	Tumor location	Tumor histopathology	Tumor immunohistochemistry
Paine et al. (current case)	11.2 × 10.5 × 5.5 cm (by pathology)	Left renal mass extending into the descending colon	High grade stage pT4 clear cell RCC with extensive sarcomatoid differentiation and multifocal tumor necrosis	Strongly positive for cytokeratin AE1/AE3 and vimentin; S100-positive cells were scattered among the tumor cells
Perez et al., 1998 [2]	Not reported	Left upper pole renal mass, invading sigmoid colon	Carcinoma with clear cell and sarcomatoid features	Not reported
Ohmura et al., 2000 [3] (Case 2)	7.0 × 6.0 × 3.5 cm (by pathology)	Right renal mass, invading the ascending colon and psoas muscle	Clear cell RCC with partial ulceration, invading the colonic submucosa	Ki-67 labeling index 20.4
Pompa and Carethers, 2002 [4]	11.0 × 8.0 × 6.5 cm (by CT)	Left lower quadrant mass, involving left kidney and descending colon, with extension into spleen and left adrenal gland	90 % spindle-shaped, poorly differentiated sarcomatoid cells	Not reported

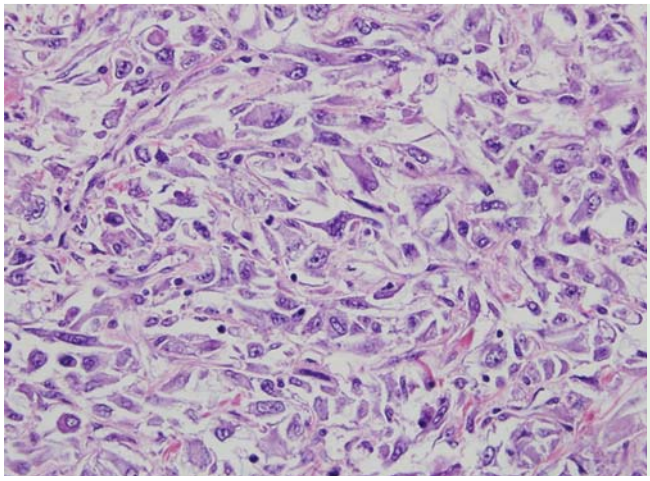


Fig. 4 Microscopic specimen showing conventional (clear cell) type renal cell carcinoma with high nuclear grade and extensive sarcomatoid dedifferentiation (hematoxylin and eosin, ×40 magnification).

The patient underwent a left radical nephrectomy and partial colectomy with left-sided transverse colostomy. The surgical specimen contained a mass (11.2 × 10.5 × 5.5 cm) arising in the renal parenchyma, penetrating the renal capsule, and invading the adherent colon (**Fig. 3**). Histopathologic evaluation revealed a stage pT4 RCC, conventional (clear cell) type, with high nuclear grade (Fuhrman grade 4), extensive sarcomatoid dedifferentiation (85 %), and multifocal tumor necrosis (**Fig. 4**). The surgical resection margins were free of tumor and no lymph node metastasis was identified.

Clear cell carcinoma is the most common (80 – 90 %) subtype of RCC [5]. However, only 5 % of clear cell RCCs exhibit sarcomatoid differentiation, indicating a higher grade and worse prognosis. Of the four reported cases, including this one, three showed sarcomatoid differentiation (**Table 1**).

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Competing interests: None

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