



# A case report of the pancreatic and periampullary metastases of renal cell carcinoma, 17 years after surgery

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**Abstract:** Renal cell carcinoma (RCC) is the most common renal tumor with a high incidence in the recent decade. Generally, an RCC metastasis mainly occurs via hematogenous and lymphomatous routes. Even though RCC has a potential to metastasize to almost any site, metastasis to the pancreas and duodenal ampulla is a rare event. In this study, we describe a case of pancreatic and periampullary metastatic renal cell carcinoma, which recurred 17 years after surgery. The patient admitted to hospital for severe symptoms of jaundice and skin pruritus after removal of the primary tumor for 17 years. Computer tomography angiography (CTA) scan and endoscopy showed pancreatic and duodenal ampullary metastasis. Finally, it confirmed by histopathologic examination. After some symptomatic treatment has been given the patient remained alive. However, intermittent hematochezia along with these metastatic lesions continue to occur until now as observed during the annual follow-up appointments. This study concludes that metastatic involvement of the pancreas and other organs should be suspected in any patient with a history of an RCC who does not manifest any typical symptom even after more than 10 years of RCC resection. In the case of abnormal symptoms and examination results after several years of RCC surgery, attention should be paid to provide immediate treatment.

**Keywords:** Renal cell carcinoma (RCC); periampullary metastasis; secondary malignant tumor; case report

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## Introduction

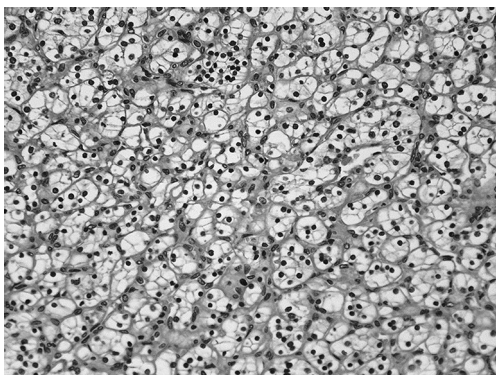
Renal cell carcinoma (RCC) is the most common renal tumor, accounting for 2–3% of all malignancies and 77.24% of all urological malignancies (1). In recent years, the incidence of an RCC is increasing in China (1). An RCC usually causes only a few early symptoms, which are often nonspecific. An RCC spreads in the whole body through the blood and lymphatic vessels, especially in the form of multiple metastases. Among them, lung metastasis is the most common, followed by liver, bone, and adrenal gland metastases (2). However, duodenal ampullary metastasis is rare.

In this paper, we describe a patient who developed a pancreatic recurrence of an RCC at 17 years after radical resection of an RCC and 1 year later had a duodenal

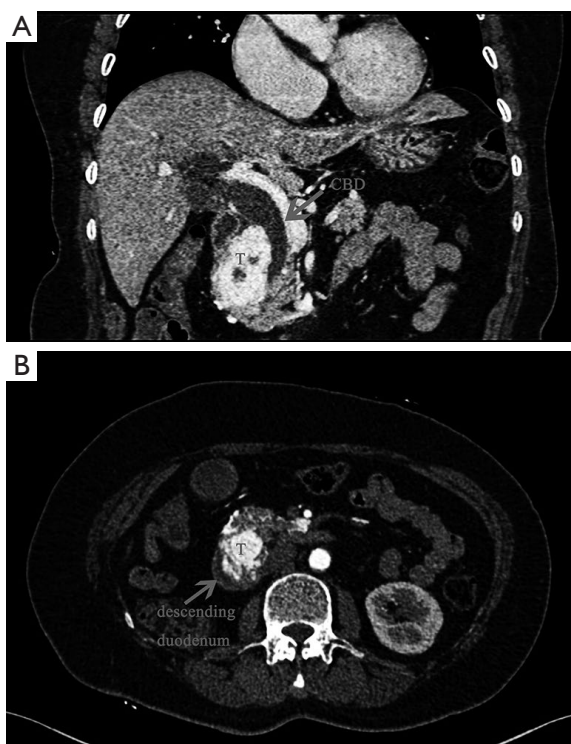
ampullary metastasis. We present the following article in accordance with the CARE reporting checklist (available at <https://dx.doi.org/10.21037/tcr-21-1137>).

## Case presentation

A 71-year-old female patient was admitted to our gastroenterology department for severe symptoms of jaundice and skin pruritus on September 1, 2017. A color doppler ultrasound conducted in another hospital showed an abdominal mass, dilated bile duct, and enlarged gallbladder. Her medical history revealed that she had undergone right nephrectomy for renal clear cell carcinoma 17 years ago. The clinical stage of RCC with Fuhrman



**Figure 1** Biopsy of primary tumor with histology. Microscopic appearance of original primary demonstrates typical histological findings for clear cell carcinoma (HE,  $\times 100$ ).

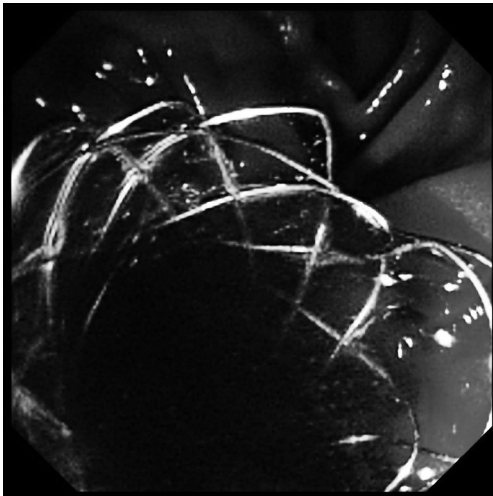


**Figure 2** Abdominal computed tomographic scan at the time of initial visit. (A) Coronal contrast-enhanced CT image shows a pancreatic head tumor oppressing the lower end of the common bile duct (CBD) and secondary dilatation of CBD. (B) Axial contrast-enhanced CT image shows a blurred boundary between the pancreatic head tumor and the descending duodenum and the descending duodenal lumen tightly compressed by the tumor.

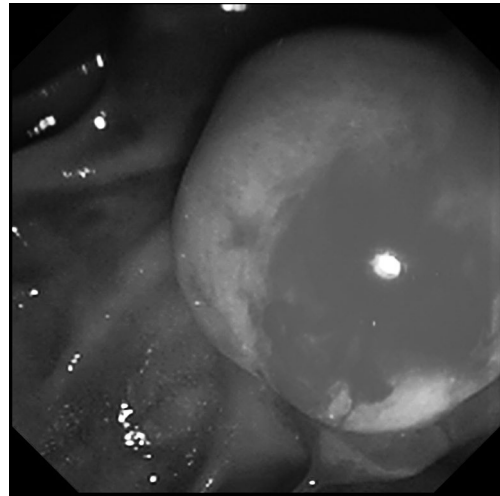
grade 3 (*Figure 1*) was stage I (T1b, N0, and M0), according to Tumor, Node, Metastasis (TNM) classification. Chemotherapy and immunotherapy were not given after surgery. On physical examination at admission, the patient exhibited red papules along with multiple scratches, without icteric sclera, all over the body. Moreover, superficial lymph nodes were not touched, the abdomen was soft, and a 15 cm surgical scar was present on the right side of the patient's waist. The liver and the gallbladder were not touched under the costal margin, and the gallbladder did not show any tenderness. Laboratory findings were as follows: ALP 27 U/L, AST 38 U/L, TBIL 260.8  $\mu\text{mol/L}$ , DBIL 202.9  $\mu\text{mol/L}$ , and GGT 453 U/L. An abdominal CTA scan showed several mass with marked enhancement in the liver (the largest one was 2.3 cm  $\times$  2.7 cm in size); moreover, a tumor with a size of 6.6 cm  $\times$  4.8 cm  $\times$  6.4 cm was found at the head of the pancreas. Additionally, choledochectasia was observed. No enlarged lymph nodes were detected (*Figure 2A,B*). She refused to receive an operation but had undergone endoscopic insertion of biliary stents (*Figure 3*). However, after the operation, she felt symptom remission. In the following year, she underwent endoscopic insertions of biliary stents twice to relieve jaundice, which occurred due to in-stent restenosis.

On October 5, 2018, the patient was hospitalized due to hematochezia. Axial contrast-enhanced computer tomography (CT) image shows the blurred boundary between the pancreatic head tumor and the descending duodenum, the descending duodenal lumen tightly compressed by the tumor, and part of the tumor protruded into the descending duodenal lumen (*Figure 4*). Thereafter, she underwent upper gastrointestinal endoscopy, which showed a mass above the duodenal papilla. A sample of the mass was withdrawn for biopsy (*Figure 5*). Histopathologic examination revealed a metastatic RCC, being consistent with metastasis of the RCC recognized 18 years ago (*Figure 6*).

On May 9, 2019, the patient was admitted again because of hematochezia. When she underwent gastroscopy, we found the protuberant lesion became bigger than before, which caused a duodenal obstruction. Therefore, we placed a duodenal stent (*Figure 7A,B*). The patient remained alive. However, intermittent hematochezia along with these metastatic lesions continue to occur until now as observed during the annual follow-up appointments.



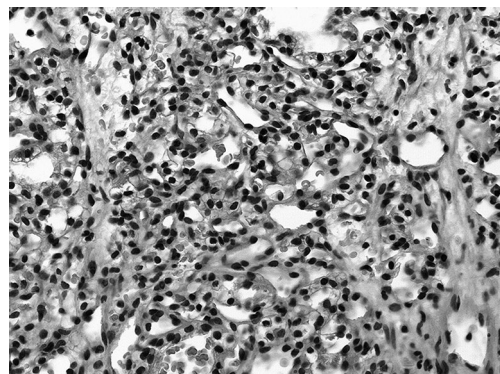
**Figure 3** Endoscopic retrograde cholangiopancreatography (ERCP) examination on September 1, 2017. A metal biliary stent (10 mm × 60 mm) is placed in the common bile duct through upper gastrointestinal endoscopy.



**Figure 5** Gastroscopic examination on October 9, 2018. Endoscopic examination shows a protuberant lesion, about 4 cm long, at the side of the stent.



**Figure 4** Abdominal computed tomographic scan on October 5, 2018. An axial contrast-enhanced CT image obtained 1 year after placement of the biliary stent shows some enlargement of the pancreatic head tumor and part of the tumor protruding into the descending duodenal lumen.



**Figure 6** Biopsy of mass with histology. Microscopic appearance of periampullary metastasis demonstrates typical histological findings for clear cell carcinoma (HE, ×200).

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written in-formed consent was obtained from the patient.

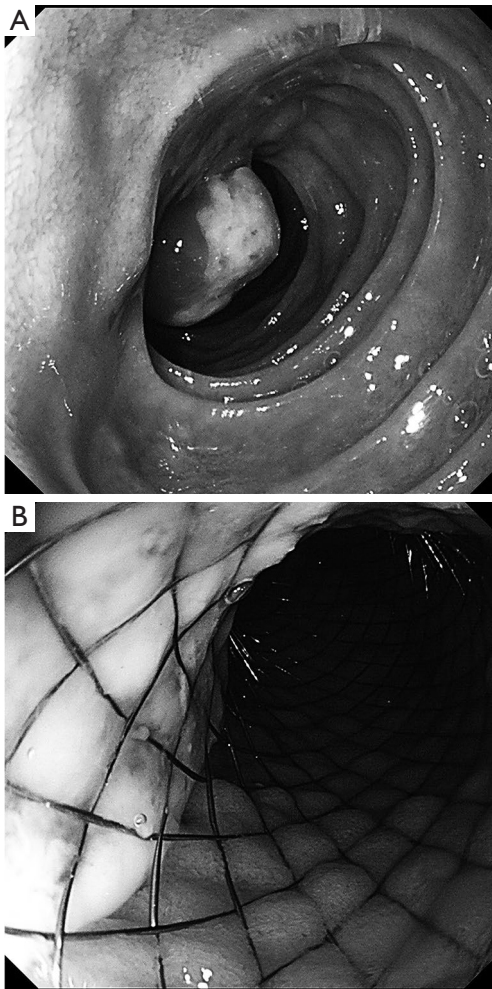
## Discussion

In the present case report, we observed an uncommon clinical behavior of an RCC. Clear cell RCC showed potential to relapse beyond 10 years after surgery (3). Recurrence of

tumors at typical sites decreased, whereas retroperitoneal organ recurrence increased in a time-dependent manner, with a pancreatic metastatic rate of 2.7% (3). A periampullary metastasis from an RCC is reported to be sporadic, which is found only in 19 cases, including the present one (4-19). Periampullary metastases ordinarily emerges acute or chronic gastrointestinal hemorrhage (13/19), duodenal obstruction (4/19), duodenal ulcer (1/19), or obstructive jaundice (1/19). Diagnosis of duodenal metastases as a cause of gastrointestinal bleeding is a challenge due to its rarity and lack of typical clinical characteristics.

The findings of the present case study, along with some other studies, indicated that most of the duodenal metastasis





**Figure 7** Gastroscopic examination on May 9, 2019. Endoscopic examination shows an 8 cm protuberant lesion causing a duodenal obstruction (A) and placement of a duodenal stent (22 mm × 120 mm) (B).

of an RCC occurs after right kidney nephrectomy. However, the mechanism is poorly understood. Synchronous metastases of an RCC to the duodenum and pancreas were a rare phenomenon in most patient (20). In the present case, due to the patient's rejection of surgical treatment, the duodenal renal cell metastasis from the secondary pancreatic malignant tumor cannot be confirmed. Otherwise, pancreatic metastases are usually asymptomatic, accompanied by abdominal pain, weight loss and other common symptoms, often overlooked by patients. However, after the clinical examinations, we find that the metastasis may have spread.

For any RCC patient with pancreatic or duodenal metastasis, if feasible in medicine and technology, surgery is

the best option to choose, because it seems to prolong the disease-free survival (4,20). However, multiple metastatic lesions carry a worse prognosis than solitary ones (4). Previous studies have found that the average survival time of patients with disseminated malignant tumors is about 4 months, and generally, only 10% of them can survive for 1 year (4). However, in the present case study, the patient still survived for 4 years after the detection of metastases. The reason is unclear and needs further study. The case draws attention to an essential aspect of the biological behavior of an RCC. This type of tumor is often a slow-growing lesion and may be associated with a late onset of solitary metastases that may occur even after more than 10 years after the removal of the primary tumor. In the case of abnormal symptoms and examination results after several years of RCC surgery, attention should be paid to provide immediate treatment.

### Conclusions

The present case study indicates that an RCC can cause metastases without any typical symptom even after more than 10 years of primary tumor surgery. This study also highlights the necessity of monitoring patients with an RCC for preventing any further cost and loss of life.

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### Footnote

*Reporting Checklist:* The authors have completed the CARE reporting checklist. Available at <https://dx.doi.org/10.21037/tcr-21-1137>

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*Conflicts of Interest:* All authors have completed the ICMJE uniform disclosure form (available at <https://dx.doi.org/10.21037/tcr-21-1137>). The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects

of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

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