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## Case Report

Renal cell carcinoma presenting with upper gastrointestinal bleeding: A case report<sup>☆</sup>James Mega, MD<sup>a,\*</sup>, Rene Roberts, MD<sup>a</sup>, Mohamed M Shahin, MD<sup>b</sup>, Ahmed Kamel Abdel Aal, MD<sup>b</sup><sup>a</sup>Department of Interventional Radiology, MD Anderson Cancer Center, 1400 Pressler St. Unit 1471, Houston, TX 77030, USA<sup>b</sup>Department of Diagnostic and Interventional Imaging, University of Texas Health Science Center at Houston (UTHealth), Houston, TX 77030, USA

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## ABSTRACT

Renal cell carcinoma (RCC) is increasing in incidence as more cross sectional imaging is performed with approximately 20%-30% of cases presenting with metastasis at the time of diagnosis. Small bowel metastatic disease is rare, with RCC to the small bowel being exceptionally rare. We present a case report of metastatic RCC that initially presented as upper gastrointestinal bleeding at time of diagnosis. We also provide a brief discussion of small bowel metastatic RCC disease and literature review.

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## Introduction

The incidence of renal cancer has been increasing over the past few decades [1]. Approximately 20%-30% of renal cell carcinoma (RCC) patients present with metastasis at time of diagnosis with lung (50%-60%), bone (30%-40%), liver (30%-40%), and brain (5%) being the most common sites of metastasis [2]. Small bowel is an uncommon site of RCC metastasis and metastasis is an uncommon cause of upper GI bleed [2,3]. Multiple case reports have been presented for cases of metastatic RCC to the small bowel after diagnosis. We present case of RCC first diagnosed on imaging after presentation for melena from a duodenal RCC metastasis.

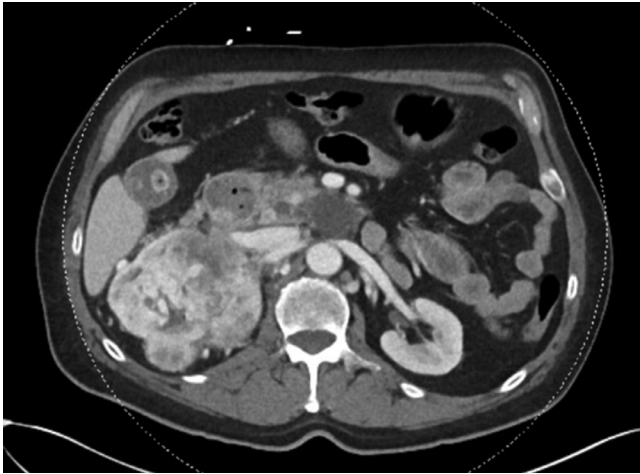
## Case presentation

Sixty-five-year-old male PMH of HTN and GERD who presented to his gastroenterologist for 1-2 months of melanic stools. He denied any problems with oral intake. However, he noted a 10-15 pound weight loss over the previous 1-2 months with mild dyspnea over the past 1-2 weeks. The patient had an upper endoscopy performed to evaluate his reported melena which noted an obstructing mass with active bleeding in the second portion of the duodenum. A biopsy was performed during the endoscopy and the patient was transferred to the emergency department for further work-up. Initial evaluation demonstrated symptomatic anemia with tachycardia

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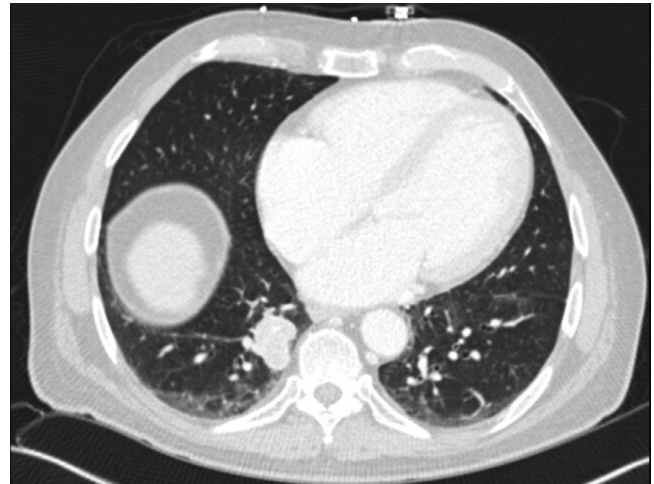
**Fig. 1 – CT Pancreas with oral and IV contrast: heterogeneous right kidney upper pole mass with loss of fat plane between the second portion of the duodenum and the cephalad extent of the associated duodenal mass. Incidentally noted gallbladder stones and duodenal diverticulum.**



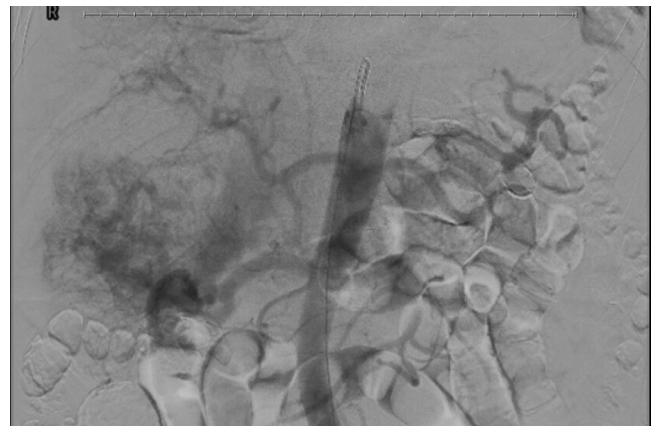
**Fig. 2 – CT pancreas with oral and IV contrast: heterogeneous right kidney upper pole mass with bilateral adrenal lesions.**

and hemoglobin of 6.9. A CT pancreas was performed to further evaluate the obstructing duodenal mass which revealed a large, heterogeneous renal mass with loss of fat plane between the right kidney and duodenum (Fig. 1). Additionally, the patient was noted to have loss of fat plane with a hypoattenuating right hepatic lesion, bilateral adrenal masses, a right lower lobe lung mass as well as numerous other bilateral pulmonary nodules concerning for metastatic disease (Figs. 2 and 3).

The patient was admitted to the hospital and transfused for his symptomatic anemia. Urology, Oncology, IR, and Surgical Oncology services were all consulted. After a multidisciplinary discussion, the decision was made to proceed with angiography with any possible interventions if necessary. Di-



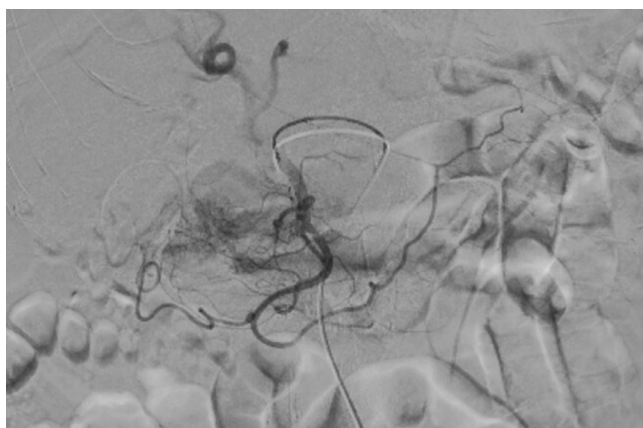
**Fig. 3 – CT chest with IV contrast: RLL 3 cm pulmonary mass.**



**Fig. 4 – Suprarenal aortogram: angiography demonstrates hyperemia and tumor blush from the right upper pole kidney mass with rapid washout to the IVC.**

agnostic angiography was performed with evaluation of the celiac axis, gastroduodenal artery, proper hepatic artery, superior mesenteric artery, and inferior pancreaticoduodenal arteries (Fig. 4). The large right renal mass demonstrated hypervascularity and tumor blush with rapid venous drainage via the inferior vena cava. Supply to the duodenal mass was demonstrated via the gastroduodenal and inferior pancreatic arteries (Fig. 5). The gastroduodenal artery was selectively catheterized with embolization performed with detachable coils and temporary and permanent particles. The inferior pancreaticoduodenal artery was selectively catheterized via the superior mesenteric artery with embolization performed with temporary and permanent particles. Postintervention angiography demonstrated good technical response (Fig. 6).

Embolization of the right upper pole renal mass was also performed with permanent particles to decrease the risk of tumor bleed given his symptomatic anemia and potential surgery with urology or surgical oncology (Fig. 7). Ultimately,



**Fig. 5 – Gastroduodenal angiogram: angiography demonstrates hyperemia and tumor blush from the mass within the second portion of the duodenum.**

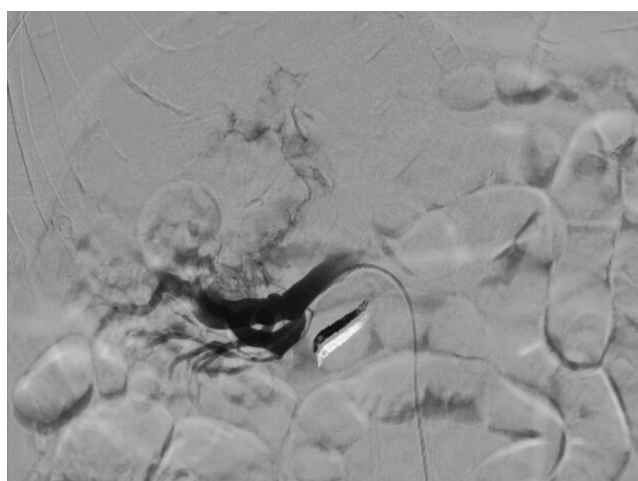


**Fig. 6 – Superior mesenteric arteriogram: angiography demonstrates decreased flow to the second portion of the duodenum after coiling and temporary and permanent embolization of the GDA and temporary and permanent embolization of the inferior pancreaticoduodenal artery from the SMA.**

the patient was discharged home with no further bleeding after endovascular intervention. The endoscopic biopsy final diagnosis was consistent with RCC and the patient was set up with oncology for planned treatment of his stage IV RCC with chemotherapy.

## Discussion

RCC is a common malignancy comprising 2%-3% of all cancers in the United States [4]. RCC can manifest in a variety of ways including pain, hematuria, abdominal mass, or weight loss. However, the majority of cases are asymptomatic and approximately 60% are diagnosed incidentally on imaging [5].



**Fig. 7 – Postintervention right renal angiogram: angiography demonstrates decreased flow to the right upper pole renal mass and decreased outflow via the IVC.**

The classic triad of hematuria, flank pain and palpable abdominal mass are rarely the first symptoms of presentation.

The incidence of RCC metastatic disease at the time of diagnosis is approximately 25%-30% [2]. The most frequent sites of metastasis being the lungs, lymph nodes, liver, bones, and adrenal glands [2]. The occurrence of metastatic disease to the small intestine is exceedingly rare, with only a small percentage of all metastatic tumors to the small intestine being accounted for by RCC [6,7].

Most cases of duodenal metastasis from RCC present with upper gastrointestinal bleeding or obstructive symptoms, sequelae include anemia, melena, fatigue, and early satiety [6]. By far, the most common clinical presentation is GI bleeding, found in 67% of cases [2,3]. RCC can cause GI bleeding via direct invasion or via metastatic invasion into the adjacent blood vessels [2,5]. Solitary duodenal metastasis from RCC is incredibly rare and most frequently involves the periampullary region or the duodenal bulb [8,9]. In cases of right-sided RCC, the probability of duodenal metastasis is higher due to the greater risk of locoregional invasion. Intestinal metastases to the jejunum and the ileum are usually due to tumoral invasion of intestinal vessels and previous studies indicate that the jejunum is the most frequent site [4,5].

Diagnosis of small bowel metastasis can be challenging, and patients often experience a delay in diagnosis. Endoscopy with direct tissue sampling is the most common method of confirming diagnosis, however, capsule endoscopy is another method for diagnosis but does not allow for direct tissue sampling [5]. Takeda T et al [7] described the combination of capsule endoscopy and double balloon enteroscopy as effective in localization and histologic diagnosis of small bowel metastases. Small bowel barium follow-through and abdominopelvic CT have a lower yield of cancer diagnosis [10].

Treatment options for solitary duodenal RCC metastasis depend upon the location and extent of invasion. Procedures range from classic pancreaticoduodenectomy (Whipple procedure) to interventional embolization [6]. Isolated RCC

metastatic lesions should be treated with complete mastectomy when surgically feasible. Hemostasis of GI bleeding due to metastatic lesions is difficult to control endoscopically and warrants evaluation with angiography and possible embolization [6]. Arterial embolization of tumor-supplying arteries has been reported to control GI bleeding effectively, but long-term follow-up data is lacking [11,12]. Interventionalists should always keep in mind that embolization for the control of hemorrhage in the small bowel carries a significant risk of bowel infarction. For disseminated malignancy, treatment is mainly supportive and palliative [6].

Multiple case reports have been presented for cases of metastatic RCC to the small bowel after diagnosis. Trojaniello et al described a case report of RCC presenting with recurrent intussusception and melena is the only other case report of RCC presenting with GI bleed during initial presentation found in our literature review. Our case is a unique initial presentation of metastatic RCC manifesting with GI bleeding due to a large locally invasive right upper pole RCC. Additionally, our case highlights the role for interventional radiology and embolization. Interrogative angiography was able to identify the majority of arterial vascular supply to the culprit bleeding metastasis. Embolization was performed and the patient subsequently stabilized.

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## Patient consent

Written informed consent for the publication of this case report was obtained from the patient.

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