

# Small bowel

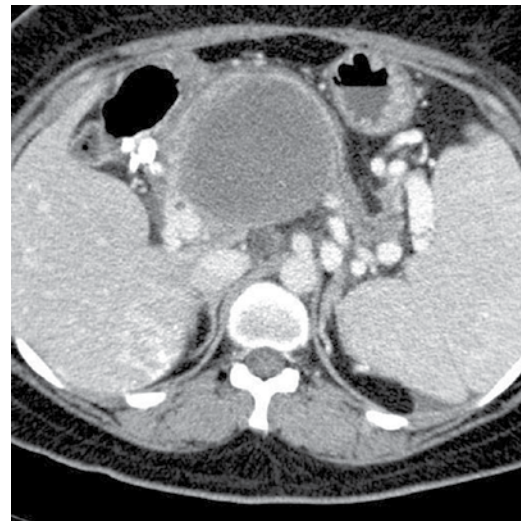
## Case 1

Surachai Amornsawadwattana, MD.

Rungsun Rerknimitr, MD.

A 26-year-old female, presented with recurrent melena. Her past history was insignificant except for a history of severe epigastric pain 3 years ago. The initial physical examination revealed mildly pale conjunctiva without sign of chronic liver stigmata. Laboratory investigation showed pancytopenia (Hb 7.8 g/dL, WBC 3,300/mm.<sup>3</sup>, Plts. 108,000/mm.<sup>3</sup>) and prolonged prothrombin time (PT 15.7 sec, INR 1.4). Liver function tests were unremarkable except for a low serum albumin level (3.2 g/dL). EGD was performed as shown.





EGD revealed **duodenal varices** with recent bleeding stigmata (small ulcer) in the duodenal bulb (white arrow) and large gastric varice in the fundus. No varices were detected in the esophagus. A mixture of cyanoacrylate and lipiodol was injected into duodenal varices.

Subsequently, a CT of the abdomen was obtained and disclosed a 7.6x7.2x7.9 cm. cyst involving pancreatic head, neck and proximal body. The splenic vein was not demonstrated. Prominent tortuous vessels were also detected near gastrohepatic & gastro-splenic ligaments together with a large splenorenal shunt. The diagnosis was a **pancreatic pseudocyst with splenic vein thrombosis resulting in gastric varices and bleeding duodenal varices.**

## Discussion:

Ectopic varices are quite uncommon<sup>1</sup>. They are found only in 1-3% of cirrhotic patients and 20-30% of patients with extrahepatic portal hypertension. The common locations of ectopic varices in the GI tract are small bowel, large bowel and enterostomy sites, but hepatobiliary tree, vagina, bladder and peritoneum as the sites also have been reported. Previous abdominal surgery is also a risk factor, and the possible mechanism is the postoperative adhesion that might create a collateral circulation. Mass compression near splenic and portal veins can be the cause of venous thrombosis. Clinical manifestation can be acute or recurrent, massive or minor bleeding. Bleeding ectopic varix is considerably a life-threatening condition, the mortality rate is approximately 35% due to its obscure in location. Treatment options that had been

reported in the literatures are segmental resection, portosystemic shunting, TIPS, sclerotherapy of bleeding varices, variceal ligation, and beta blocker therapy.

In our case, pancreatic pseudocyst was suspected as a cause for splenic vein thrombosis. Pancreatitis and pseudocyst can cause both arterial and venous vascular complications<sup>2</sup>. Splenic, superior mesenteric and portal veins thrombosis were detected in 19%, 14% and 13%, respectively in acute pancreatitis.

## References

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## Case 2

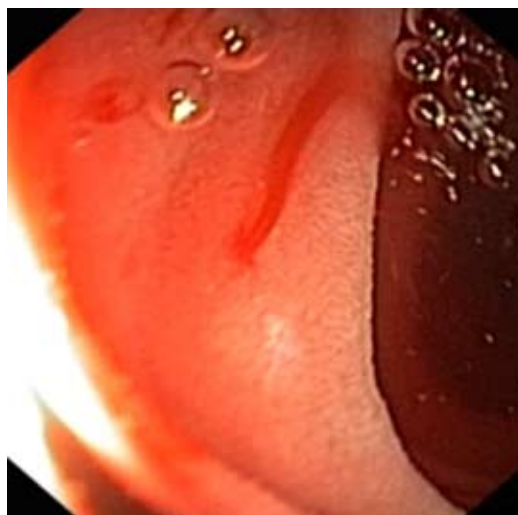
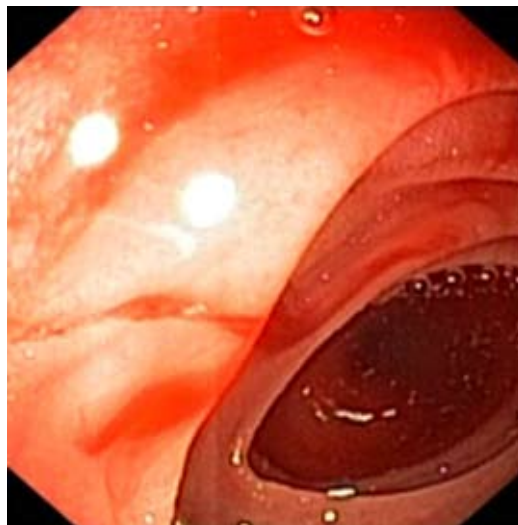
Surachai Amornsawadwattana, MD.  
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An 81-year-old female with diabetes mellitus with end stage renal disease was admitted due to infected continuous ambulatory peritoneal dialysis catheter. During hospitalization, she developed hematochezia and hypovolemic shock. EGD was performed and no abnormality was detected. Subsequently, a push enteroscopy was done. Findings are shown as below.

Push enteroscopy revealed active blood oozing from the mucosa of proximal jejunum. Neither ulcer nor abnormal vessel was identified. The provisional diagnosis was **jejunal angiodysplasia**. Argon plasma coagulator (APC) was applied to control bleeding and the immediate hemostasis was achieved.

### Discussion:

Angiodysplasia is considered to be the most common cause of GI bleeding from small bowel in patients who are older than 50 years<sup>1</sup>. It can be found indifferently between male and female patients. It is usually found in the stomach and right-sided colon. Pathologically, it consists of





dilated, thin-walled and tortuous capillaries and venules, which lack of smooth muscle layer, in the mucosa or submucosa of GI tract<sup>2</sup>. Pathogenesis is uncertain<sup>1, 2</sup>. It may be the results of degenerative process or neurohormonal abnormality causing increased flow and relaxation of smooth muscles leading to incompetent pre-capillary sphincter. Many medical conditions are associated with this lesion including chronic kidney disease, scleroderma, CREST syndrome, portal hypertension and Turner syndrome<sup>1</sup>. Most patients are asymptomatic and usually diagnosed during colonoscopy<sup>2</sup>. If it bleeds, it can be presented as obscure or overt GI bleeding. The patients may present with either having iron deficiency anemia or passing dark or maroon stool<sup>2</sup>. Endoscopically, it usually presents as discrete single or multiple small, red, radiating vessels<sup>1, 2</sup>. Sometimes it is circled by a pale “halo sign”<sup>1</sup>.

Due to the widespread use of small bowel enteroscopy and capsule endoscopy, the diagnosis of small bowel angiodysplasia has been made increasingly. If bleeding occurs, hemostasis can be accomplished by thermal method, embolization and surgical treatment<sup>1, 2</sup>. Medical therapies such as hormonal therapy (estrogen and progesterone) and octreotide had been previously studied in order to prevent recurrent bleeding, but the results were disappointing<sup>1</sup>.

## References

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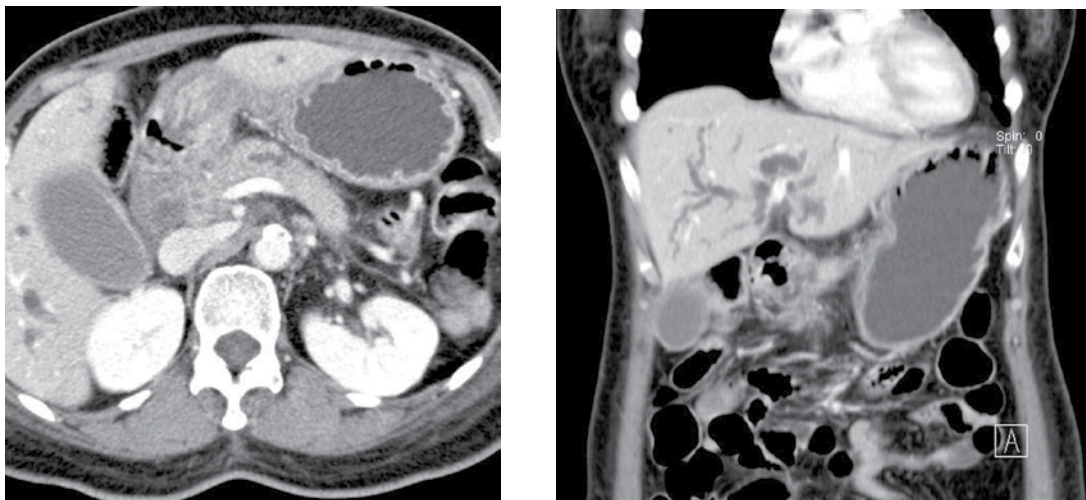
## Case 3

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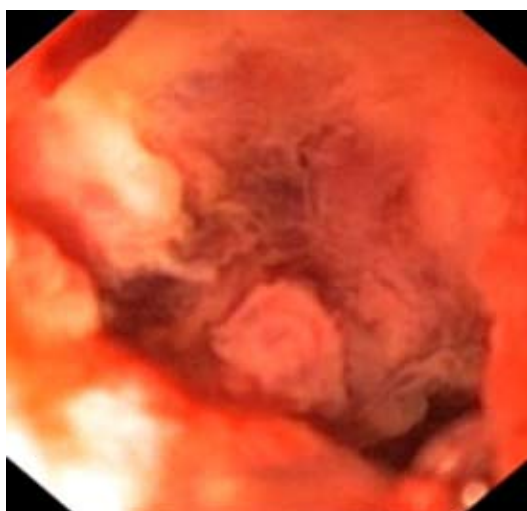
Akkawat Janchai, MD.

Rungsun Rerknimitr, MD.

A 63-year-old female, presented with obstructive jaundice and weight loss. Physical exam showed marked jaundice and palpable gallbladder. CT scan of the upper abdomen was obtained and the results are shown in figure 1. During hospitalization, she developed hematochezia. Duodenoscopy was performed and findings are shown as below (Figure 2).



**Figure 1** CT scan of the upper abdomen revealed pancreatic head mass with distal CBD obstruction.



*Figure 2 Ulcerative necrotic mass with blood oozing from duodenal bulb (pictures were obtained from an end-view and a side-view endoscope)*

End-view and side-view duodenoscopy revealed ulcerative necrotic mass with bleeding that nearly complete obstructing the lumen of duodenal bulb as shown in figure 2. The provisional diagnosis was bleeding pancreatic cancer with invasion of duodenal bulb. Argon plasma coagulator (APC) was applied to achieve hemostasis, but it failed to stop

bleeding. Emergency embolization was attempted and showed extravasation of blood into duodenal bulb as shown in figure 3. Finally bleeding was controlled. Subsequent EGD with biopsy was performed and it confirmed the diagnosis of pancreatic adenocarcinoma invading duodenal bulb.



*Figure 3 Angiogram showed active bleeding into duodenal bulb.*

## Discussion:

GI bleeding from pancreatic cancer is relatively uncommon<sup>1</sup>. The proposed mechanisms of GI hemorrhage are 1) direct invasion of tumor into duodenal mucosa 2) bleeding gastric varices secondary to splenic vein thrombosis 3) a fistula from the blood vessel to duodenum (namely wirsungorrhage) or 4) direct tumor bleeding into pancreatic duct (namely hemosuccus)<sup>2</sup>. The most common symptoms of GI bleeding from pancreatic cancer are passing tarry stool and hematochezia, but hematemesis also had been rarely reported this may be explained by the bleeding that occurs below the point of obstruction<sup>1, 2</sup>. Hemostasis of this condition was often difficult, but chemotherapy, radiotherapy and pancreaticoduodenectomy were previously reported<sup>1, 2</sup>. Angiography with embolization seems to be beneficial<sup>1</sup>.

## References

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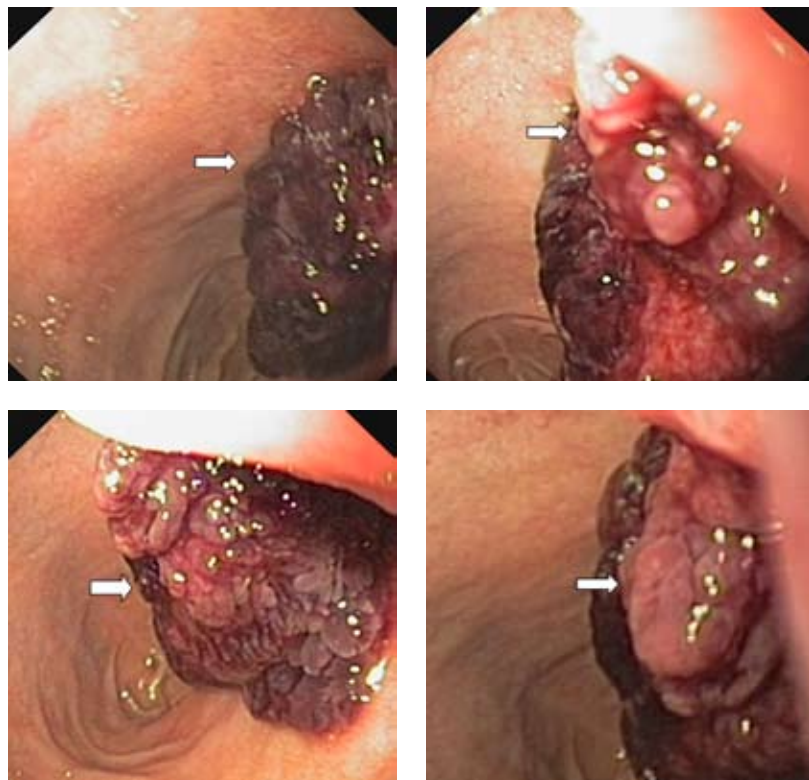
## Case 4

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Akkawat Janchai, MD.

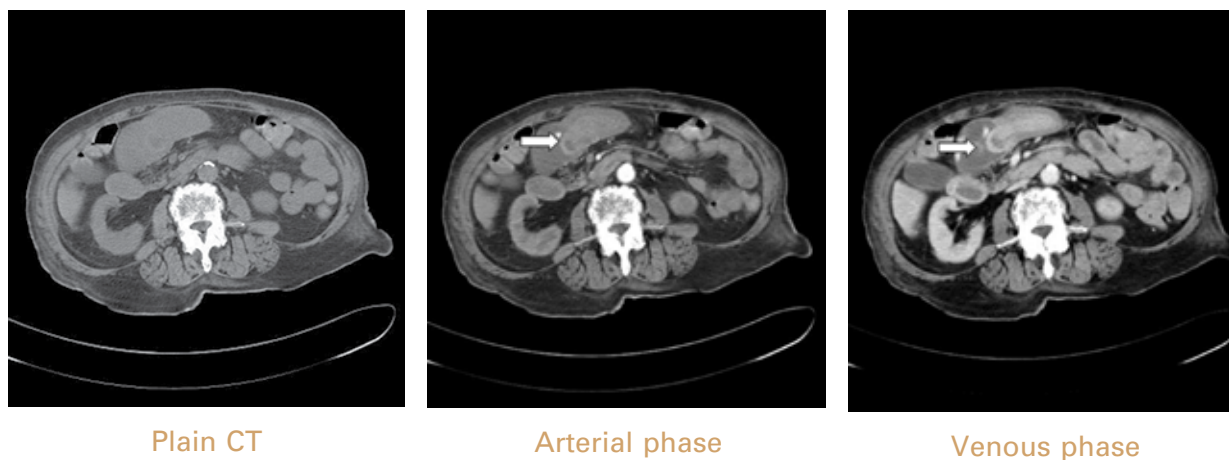
Rungsun Rerknimitr, MD.

A 78-year-old female with end stage renal disease, diabetes mellitus, and triple vessels disease, presented with melena. EGD was done and showed as figure A. CT scan of the whole abdomen was done and showed as figure B. While she was admitted to the intensive care unit, she developed an active gastrointestinal bleeding with hypotension. Subsequently, she underwent a successful angiography with gelfoam embolization (Figure C).

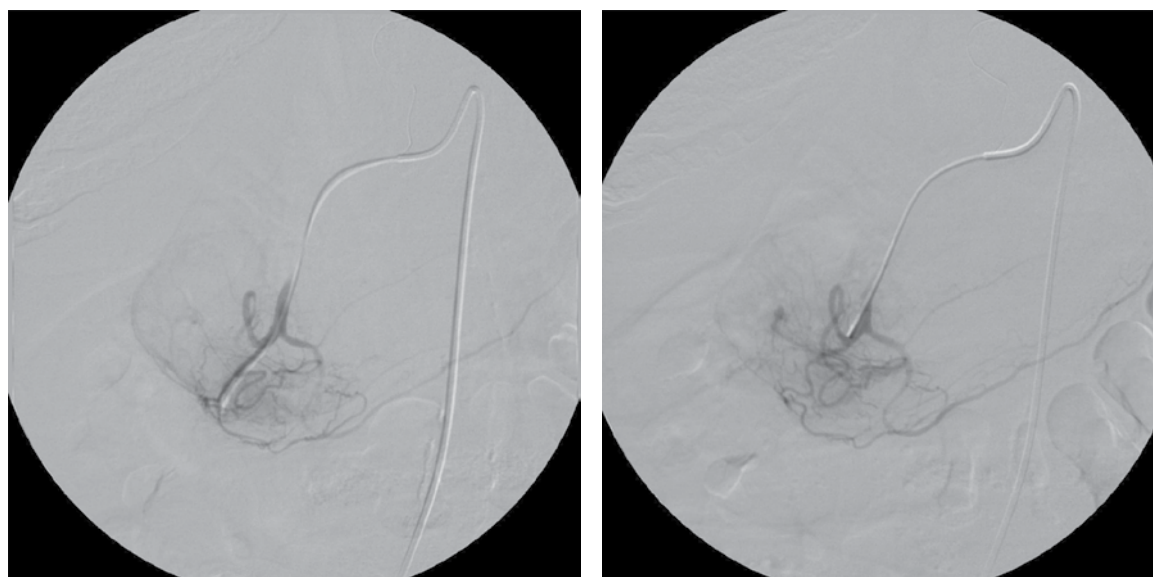


**Figure A** A large reddish-purple exophytic mass (white arrow) sized 5x5 cm. in diameter with blood clot on top occupied half of duodenal bulb and extended to pyloric channel without sign of active bleeding.





**Figure B** CT scan of the whole abdomen; showing intraluminal mass with cystic component protruding into duodenal bulb. Serpiginous arterial enhancing structures within duodenal bulb were observed (white arrow).



**Figure C** Angiography showed a vascular staining mass at duodenal bulb supplied by multiple capillaries network that originated from a branch of gastroduodenal artery, just distal to the origin of right gastroepiploic artery.

## Diagnosis:

Cavernous hemangioma of the duodenum

## Discussion:

Hemangiomas are congenital benign vascular lesions that can be classified as capillary, cavernous, or mixed type. Histologically, they are venous malformations and not true tumors. Hemangiomas are well circumscribed but not well encapsulated. Grossly, cavernous hemangiomas appear as polypoid or moundlike, reddish-purplish lesions on the mucosa. Histologically numerous dilated, irregular, blood-filled spaces can be frequently seen in the two layers of mucosa and submucosa and sometimes extend through the muscular wall to the serosa. Lesions may be single, few, or many and mainly located in the GI tract or may occur in association with various lesions in other areas of the body as part of a syndrome such as blue rubber bleb nevus syndrome, Klippel-Trénaunay-Weber syndrome, Maffucci syndrome, Proteus syndrome, and diffuse neonatal hemangiomatosis. Majority of patients present with evidence of acute or chronic GI bleeding, although obstruction, intussusception, and perforation may occur.<sup>1, 2</sup> The small intestine, especially the jejunum, is the most common site of involvement, followed by the colon, especially the rectosigmoid.<sup>3</sup> Focal calcification, thrombi, and hyalinization may be present and phleboliths, especially in clusters. Barium

examination of the small intestine typically reveals a compressible polypoid intraluminal mass or a nodular filling defect with mucosal irregularities.<sup>1, 2</sup> Resection of hemangioma is the only curative method. In case of acute bleeding, angiography and embolization can be used but bleeding recurrence is common issue.<sup>4, 5</sup>

## References

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## Case 5

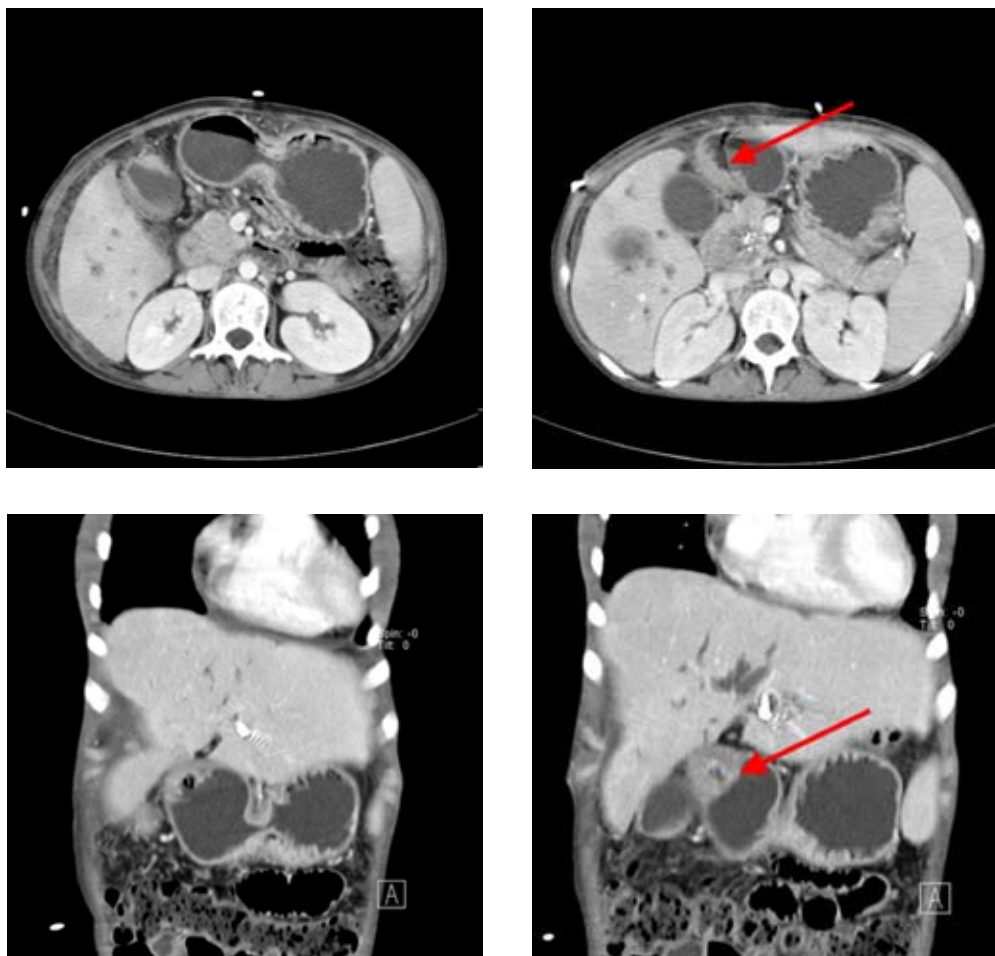
Chatchai Kriengkirakul, MD.

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A 20-year-old female, known case of unresectable hilar cholangiocarcinoma status post two biliary metallic stents insertion bilaterally into left and right intrahepatic ducts (IHD), five months later, she presented with coffee ground emesis. EGD was done and showed as figure A. CT scan of the whole abdomen was done as figure B.



**Figure A** EGD showing a fungating mass with exudates on top in duodenal bulb. The tumor bled easily and obstructed the duodenal lumen by precluding the scope passing.



*Figure B CT abdomen showing tumor invading duodenal bulb (red arrow) and dilatation of stomach and duodenal bulb were observed.*

## Diagnosis:

**Cholangiocarcinoma with tumor invading duodenum**

## Discussion:

Cholangiocarcinoma is a relatively common hepatobiliary cancer in East Asia where liver fluke infestations (*Clonorchis sinensis* and *Opisthorchis*

*viverrini*) are prevalent. The most common clinical manifestations of cholangiocarcinoma are jaundice, pruritus, right upper-quadrant abdominal pain, and weight loss. Approximately 10% of cholangiocarcinomas arise within the intrahepatic ducts of the liver parenchyma itself (peripheral cholangiocarcinomas), 50–60% arise at the bifurcation of the hepatic ducts (hilar tumors), and less frequently 20–30% of cholangiocarcinomas develop in the distal common bile

duct. Less than 10% of all cholangiocarcinomas are multifocal or diffuse. Special features of cholangiocarcinoma include early invasion of adjacent organs including liver (when tumor is located at the hilum it can directly invade the liver or perihepatic structures such as hepatic artery and portal vein), nodal metastases (in up 1/3 of cases), and many structures including nerve, lymphatic channel, and subepithelium.<sup>1</sup> In Leung VKS et al series<sup>2</sup>, they reported that cholangiocarcinoma of the left lobe extended towards the lesser curve of stomach and gastroesophageal junction resulting in dysphagia and persistent vomiting.

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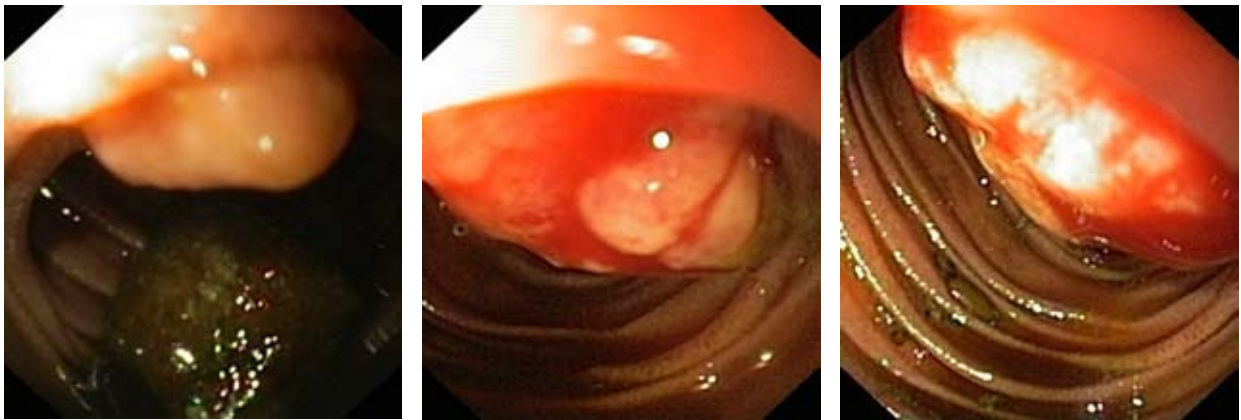


## Case 6

Chatchai Kriengkirakul, MD.

Rungsun Rerknimitr, MD.

A 66-year-old female, known case of angiosarcoma of the scalp with post surgery and radiochemotherapy about a year ago presented with coffee ground emesis and passing melena. EGD was done as shown in the figures.



In this case, EGD showed two submucosal masses (size 2 x 3 cm and 4 x 5 cm in diameter, respectively) with contact bleeding in the second part of duodenum. Biopsy was done. Histopathology was compatible with angiosarcoma

### Diagnosis:

Metastatic angiosarcoma of the small intestine

### Discussion:

Angiosarcoma is a rare malignant soft tissue tumor, representing about 1-2% of all sarcomas, with a distinct predilection for skin and superficial soft tissues. Cutaneous

angiosarcomas commonly arise in the skin of the scalp and face of elderly persons. Its presentation varies from a small plaque to multifocal nodules<sup>1</sup>. Angiosarcoma is a very aggressive tumor that is often multicentric at presentation, representing either local spread or locoregional metastasis, and has a propensity for distant metastasis. Among metastatic sites regional lymph nodes and lungs are the most common, followed by liver and spleen. By contrast, small intestine is an unusual site of metastatic localization of angiosarcoma. Perforation, obstruction and gastrointestinal bleeding are the most common manifestations of small intestine metastatic lesions<sup>2</sup>.

The diagnosis is often made at an advanced stage. Immunoperoxidase staining for factor VIII-related antigen, CD34, and more specifically CD31 can aid in diagnosis. Surgery, chemotherapy and radiotherapy are the mainstay of treatment. Its prognosis is very poor, with high tendency for local recurrence and distant metastases. Currently, no well-defined chemotherapy regimen exists for the treatment of the gastrointestinal tract. Treatment involves palliative

resection of the bleeding lesions and improving functional status with aggressive blood transfusions. The overall survival ranged from 6 weeks to 4 years<sup>3, 4</sup>.

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## Case 7

Salyavit Chittmittraprap, MD.

Rungsun Rerknimitr, MD.

A 90-year-old male underwent EGD to evaluate for dyspepsia. EGD finding was unremarkable except a yellow nodule in the duodenal mucosa as shown in the picture.



### Diagnosis:

Duodenal xanthoma

### Discussion:

Duodenal whitish-yellowish, single submucosal nodule is characteristic for xanthoma of the GI tract. Typically, its white-yellow color suggests its lipid component<sup>1</sup>.

Duodenal xanthoma, so called xanthelasma and lipid-island, are not uncommon incidental findings of the upper endoscopy. It was thought to be rare before the advent of small bowel endoscopy<sup>2, 3</sup>. A recent study using double balloon endoscopy to investigate suspected small bowel disease incidentally found more percentage of the lesions; they reported 3 small bowel xanthomata in 90 patients<sup>4</sup>.

## References

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## Case 8

Salyavit Chittmittrapap, MD.  
Chatchai Kriengkirakul, MD.  
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Figures 1 and 2

A 80-year-old was admitted to the hospital due to fever with chill, which was later proved to be a sepsis. She had a resection of abdominal aorta with Dacron graft placement 4 weeks before this admission. After her fever subsided, large hematoma at her right flank and abdominal wall was observed. Aortic graft leakage was suspicious but was not confirmed by non-contrast CT scan of the abdomen and doppler ultrasonography. Few days later she developed massive upper GI bleeding with shock. EGD found duodenal ulcer at 2<sup>nd</sup> and 3<sup>rd</sup> part with necrotic tissue was seen on top of the ulcer (Figure 1). There was a yellowish material underneath the ulcer base, this was compatible with the Dacron graft that eroded into the duodenal lumen (Figure 2). After CT angiography assured the diagnosis of aortoenteric fistula, Dacron graft removal and aortic repair were attempted. She bled another 2,000 ml in the operating theatre and had hemodynamic instability so that surgery was not complete. She eventually expired.



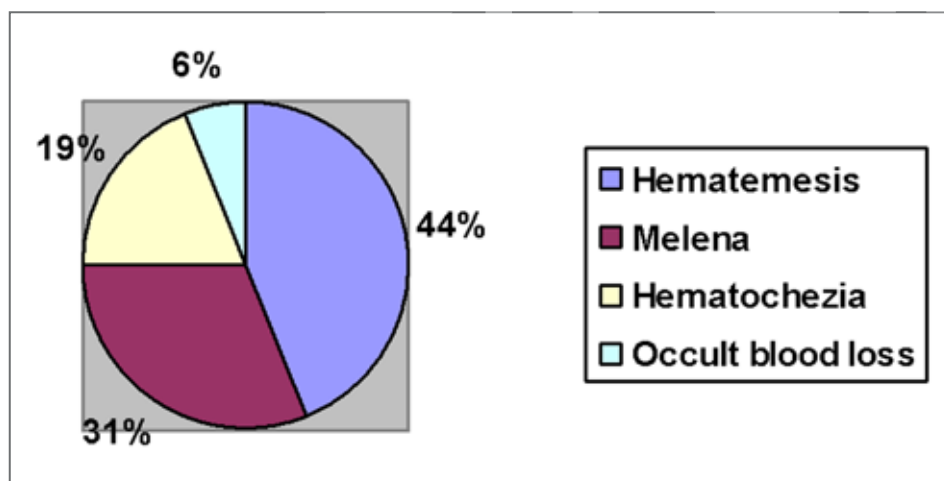


Figure 3 Presentation of AEF

## Diagnosis:

### Aortoduodenal fistula

## Discussion:

Duodenal ulcer in 2<sup>nd</sup> and 3<sup>rd</sup> part of duodenum (D2 & D3 respectively) is uncommon, its differential diagnosis should parallel to its anatomical location. D2 correlated with minor & major ampulla, right kidney hilum and pancreatic head. D3 was lying anterior to aorta, inferior vena cava, vertebra and the superior mesenteric artery and vein. Communication between artery and bowel lumen is a catastrophic life-threatening condition. Aortoenteric fistula (AEF) must be considered in upper GI bleeding patient who had undergone aortic surgery. The differential diagnoses include abdominal aortic aneurysm (AAA) rupture, abdominal aortic dissection, and ruptured visceral artery aneurysm (such as hepatic, splenic, pancreaticoduodenal, gastroduodenal, celiac, and superior mesenteric artery aneurysm).

One should bear in mind that AEF can presented with a wide range of UGIB spectrum (Figure 3). Urgent EGD with attention to the distal duodenum-jejunum oughts to be accomplished in all patients who have undergone aortic surgery and have clinical suspicion<sup>1</sup>. Biopsy should be avoided in this setting. If the result is unremarkable, one should obtain abdominal CT or CT angiography, which usually demonstrates periaortic inflammation and phlegmon, fat plane effacement, hematoma, aneurysm bulge, ectopic gas consistent with secondary evidence of inflammation. However, definite finding such as identification of the graft within the bowel lumen and active extravasation are documented in only one-third of cases<sup>2</sup>.

## References

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## Case 9

Chatchai Kriengkirakul, MD.

Rungsun Rerknimitr, MD.

A 71-year-old-male, no underlying disease presented with chronic watery diarrhea 7-10 times/day for 2 years. He had significant weight loss. CBC revealed hypereosinophilia (1,940/ul), but stool examination for ova and parasites was normal for 3 days. EGD showed minute small bowel erosion with some flattening of the villi (Figures 1,2) and aspirated duodenal juice did not find any parasite. Colonoscopy were done and shown as figures.



*Figures 1-2 EGD showed mild duodenal erosions with villi flattening*



*Figure 3 Colonoscopy showed mucosal flattening*

In this case, a colonoscopy demonstrated diffuse mild inflammation with mucosal swelling starting from the sigmoid colon and spreading to terminal ileum. Random biopsy was done and showed chronic ileitis with villi flattening. Histology of sigmoid colon up to cecum demonstrated diffuse chronic colitis with hyperplastic change. After endoscopy, the 4<sup>th</sup> stool examination was invested and showed *Isospora belli* oocyst. Patient was treated with trimethoprim-sufamethoxazole and reported the improvement of his diarrhea dramatically.

## Diagnosis:

### Intestinal isosporiasis

## Discussion:

*Isospora* was first described by Virchow in 1860. They are members of the group of organisms referred to as coccidia subclass in the family *Eimeria*. Tropical and subtropical regions are endemic areas. *Isospora* infection is found more frequent in the immunocompromised patients than immunocompetent patients. They transmit directly from human to human via fecal contaminated food or water without other animal reservoir. Infection occurs by ingestion of sporocysts-containing oocysts: the sporocysts excyst in the small intestine and release their sporozoites, which invade the epithelial cells and initiate schizogony. Upon rupture of the schizonts, the merozoites are released, invade new epithelial cells, and continue the cycle of asexual multiplication. Trophozoites develop into schizonts which contain multiple merozoites. After a minimum of one week, the sexual stage begins

with the development of male and female gametocytes. Fertilization results in the development of oocysts that are excreted in the stool. Clinical Presentation include severe watery diarrhea (1-3 L/day) due to cholera-like hypersecretion of intraluminal fluid, headache, fever, malaise, abdominal pain, vomiting, dehydration, steatorrhea, and weight loss. Eosinophilia is occasionally presented. Stool examination usually reveals *Isospora* oocysts (oval and long measuring 15 mm. by 26 mm. thin smooth walls and nonmotile) and charcot-leyden crystals.<sup>1, 2</sup> Examination of 3 fresh stools for ova, cysts, and parasites has a sensitivity of 60-90% for detection of this organism.<sup>3</sup> Microscopic findings usually present intracellular organism located on the surface of enterocytes, villous atrophy and, crypt hyperplasia. Positive tissue biopsy, without discovering the organism in the stool sample may be explained by the small number of organisms shedding; therefore tissue biopsy was useful in suspected cases. Trimethoprim-sufamethoxazole (TMP-SMX-DS twice a day for 10 days) is standard therapy and rapid improvement of diarrhea and abdominal pain. In severely immunocompromised patients increased risk for recurrence and maintenance antibiotics (TMP-SMX-DS for 3 days/week or pyrimethamine 25 mg./day) are usually indicated<sup>1, 2</sup>.

## References

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## Case 10

Phonthep Angsuwatcharakon, MD.

Rungsun Rerknimitr, MD.

A 34-year-old woman has been diagnosed with familial adenomatous polyposis (FAP). She was undergone total colectomy for 14 years. She was healthy without complaint of abdominal or constitutional symptoms. A surveillance side-view duodenoscopy was performed.



Figure 1



Figure 2

Side-view duodenoscopy revealed a polypoid lesion at the ampulla (Figure 1) and few sessile polypoid lesions at the second part of duodenum (red arrows) (Figure 2). Duodenal and ampullary biopsies revealed tubular adenoma with low-grade dysplasia.

### Diagnosis:

Ampullary and duodenal adenoma in FAP

## Discussion:

Germ line mutation in tumor suppressor gene, APC, is the main pathogenesis of familial adenomatous polyposis syndrome. This mutation involves in the initial step of the change from normal mucosa to adenomatous mucosa and a part of adenoma-adenocarcinoma sequence. Patients usually presented with numerous, up to thousand, adenomatous polyps throughout the colon. Apart from colonic involvement, FAP patients are at risk for desmoid tumor (relative

risk; RR = 852), hepatoblastoma (RR = 847), duodenal cancer (RR = 330.8), ampullary cancer (RR = 123.7), thyroid, brain and pancreas<sup>1</sup>. Duodenal polyp in FAP can be found in 50-90%, 12% of this is microadenomatous polyp, which can be diagnosed only by biopsy<sup>2</sup>. Two third of duodenal polyp are found near ampullary area. Duration for endoscopic surveillance of duodenal polyp is based on Spigelman classification and recommendation as shown in tables 1 and 2.

**Table 1** *Spigelman classification for duodenal polyposis in FAP (2)*

Criterion	1 point	2 points	3 points
Polyp number	1-4	5-20	>20
Polyp size (mm)	1-4	5-10	>10
Histology	Tubular	Tubulovillous	Villous
Dysplasia	Mild	Moderate	Severe

**Table 2** *Duration of surveillance according to Spigelman staging (2)*

Stage	Points	Surveillance interval
0	0	5 y
I	1-4	5 y
II	5-6	3 y
III	7-8	1-2 y
IV	9-12	Consider surgery

## References

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## Case 11

Phonthep Angsuwatcharakon, MD.

Rungsun Rerknimitr, MD.

A 24-year-old woman, presented with chronic epigastric pain and significant weight loss. An EGD was done.



EGD revealed fungating mass with ulceration at the third-part of duodenum. Biopsy from the mass revealed poorly differentiated adenocarcinoma.

### Diagnosis:

Duodenal adenocarcinoma

### Discussion:

The leading causes of small bowel tumors are carcinoid 33%, adenocarcinoma 30%, lymphoma 16%, and gastrointestinal stromal tumor (GIST) 7%<sup>1</sup>. By the region of small bowel, adenocarcinoma is the most common tumor

## References

found in the duodenum which accounting for 58.7% of duodenal tumors<sup>2</sup>. Duodenal carcinoma is rare, accounting for 0.5% of all gastrointestinal cancers and the incidence is 3 in 1,000,000. The risk for duodenal cancer is increased in FAP, HNPCC, and Peutz-Jegher syndrome<sup>2</sup>. Surgery is the main modality for the treatment in duodenal adenocarcinoma. Median survival for patient's undergone surgical resection was 41 months with a 5-year survival at 43%. In contrast to a curative resection, a palliative by pass surgery provided a median survival only for 12 months with a 5-year survival at 13%<sup>3</sup>.

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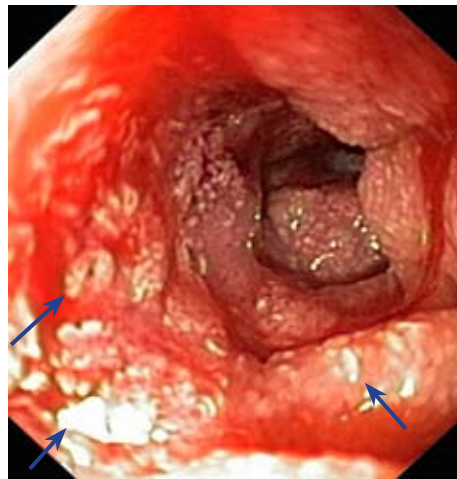


## Case 12

Salyavit Chittmittrapap, MD.

Rungsun Rerknimitr, MD.

A case of 58-year-old female, presented with epigastric pain for 2 weeks. She had pain in the epigastrium with back radiation. She also complained of weight loss and sometimes threw up undigested food within an hour after meal. EGD was performed in order to diagnosing the cause of her clinical gastric outlet obstruction. It showed circumferential friable mucosal swelling with contact bleeding in the first and second part of duodenum (Figure 1). Scope was unable to pass through the lumen (Figure 2).



**Figure 1** Duodenal wall was infiltrated by pancreatic tumor. Noted diffuse lymphatic ectasia from nodes obstructing lymph flow was noted as multiple white dots (arrows)



**Figure 2** The area above the obstruction showed less swollen mucosa and less number of lymphatic ectasia

Endoscopic ultrasonography found celiac, aortocaval, peripancreatic lymphadenopathy. EUS FNA was done. Pancreatic head mass was suspected. Her cervical lymph node was biopsied and revealed to be metastatic poorly differentiated adenocarcinoma. CT scan of the abdomen demonstrated ill-defined infiltrative mass suggesting pancreatic carcinoma.

## Diagnosis:

**Advanced pancreatic carcinoma causing duodenal obstruction**

## Discussion:

Apart from causing intussusception and hernia, small bowel neoplasm can cause small bowel obstruction. Local invasion and metastasis to small bowel are even more common than primary tumor itself. Due to the proximity to duodenum, 10 to 25% of patients with pancreatic cancer will develop duodenal obstruction during the course of the disease. Surgical bypass is not always feasible due to patient's condition and comorbidities. Self-expandable metal stents (SEMS) duodenal stenting provided good alternative treatment to surgical bypass procedures with more than 90% of success rate<sup>1-3</sup>. "Wall-Flex (Boston Scientific, Natick, MA, USA)" a newly developed enteral metal stent is very effective and safe, its demonstrated 305 median days of stent patency<sup>4</sup>. Though patients with pancreatic cancer usually do not live that long. Study from

the UK showed that the median survival post-stenting was only 10 weeks (range 3-28 weeks)<sup>5</sup>.

In this patient, her duodenum was infiltrated and compressed by aforementioned mass. Metastasis to distant lymph node, lungs, liver, and bone were also noted. Duodenal stenting to overcome obstruction is the most attractive action.

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## Case 13

Attaphorn Trakarnsanga, MD.

Thawatchai Akaraviputh, MD.

Supaporn Opasanon, MD.

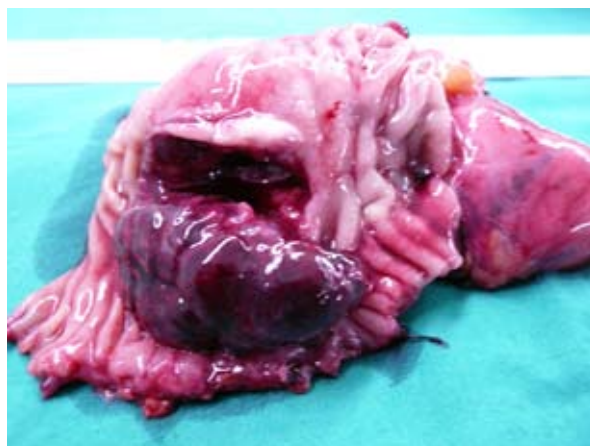


*Figure 1 Endoscopic finding revealed a large proliferative lesion with contact bleeding at second part of duodenum.*

A 75-year-old man developed three episodes of massive upper gastrointestinal bleeding (UGIB). Three years prior to this UGIB episode, he underwent a nephrectomy of the left kidney for renal cell carcinoma (RCC). His underlying diseases included coronary heart disease and idiopathic hypertension. Gastroscopy revealed a large proliferative mass at the second part of the duodenum without active bleeding (Figure 1). Computed tomography of the abdomen revealed a large pancreatic mass (3x4x5 cm.) invading the second part of the duodenum without any evidence of distant metastasis (Figure 2). He underwent a classical Whipple's operation. Resected specimen revealed a large tumor mass at the head of the pancreas invading the duodenum (Figure 3). Pathologic study confirmed a large clear cell of RCC. On a 2-year postoperative follow-up, he was doing well without any evidence of a recurrent tumor or gastrointestinal symptoms.



**Figure 2** CT scan of the upper abdomen showing a lesion in the head of pancreas with duodenal invasion (white arrow).



**Figure 3** Resected specimen of pancreatic head and duodenum showing a large ulceroproliferative lesion at the head of pancreas invading into duodenum.

## Diagnosis:

Metastatic renal cell carcinoma to the head of the pancreas

## Discussion:

Metastatic cancer to the pancreas is not common and accounts for less than 2% of all pancreatic malignancies, however metastasis from RCC is the most common primary cell<sup>1, 2</sup>. RCC could recur many years after the resection of the primary tumor; therefore the patients with RCC require a long-term follow-up and re-evaluation when they have recurrent gastrointestinal symptoms. In contrast to other tumors of the pancreas, pancreatic metastasis from RCC is associated with a good prognosis with a 5-year survival rate of 75%, when a curative resection is performed<sup>1-4</sup>. This knowledge is encouraging for surgeons to justify a more radical pancreatectomy

when pancreatic metastasis is solely secondary from RCC.

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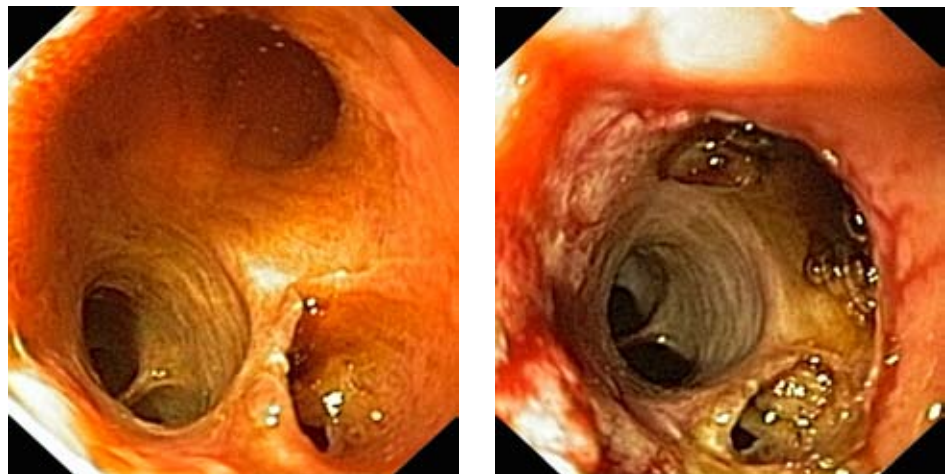
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## Case 14

Rapat Pittayanon, MD.  
Rungsun Rerknimitr, MD.

A 49-year-old Thai man with underlying unresectable pancreatic cancer and post choledochojejunostomy biliary bypass was admitted due to recurrent upper GI bleeding. EGD was performed as shown in the pictures.



EGD finding: multiple necrotic ulcers at the anastomotic bilio-enteric site with some bloody oozing

### Diagnosis:

Anastomosis bleeding.

### Discussion:

Late gastrointestinal (GI) bleeding in person who underwent hepatobiliary bypass can originate from peptic ulcer, ulceration from the anastomosis, eroded

## References

vessel or dehiscence of an anastomotic suture line<sup>1</sup>. A late onset of hemorrhage has previously been described as delayed postoperative hemorrhage (DPH) and needed re-laparotomy<sup>2</sup>. Currently, re-laparotomy and interventional embolization are useful for the management of DPH after hepatobiliary bypass. However, interventional approach carries is less invasive.

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## Case 15

Salyavit Chittmittrapap, MD.

Rungsun Rerknimitr, MD.

A 63-year-old hypertensive male patient was admitted for his recurrent abdominal pain. Four months ago, he had an episode of acute pancreatitis which recurred again 2 months later. His abdominal CT scan at that time showed pancreatic pseudocyst.

He passed black tarry stool while was admitted. Apart from duodenal ulcer, EGD demonstrated a 3 mm. diameter fistula draining whitish saponified material (Figure 1, white arrow).

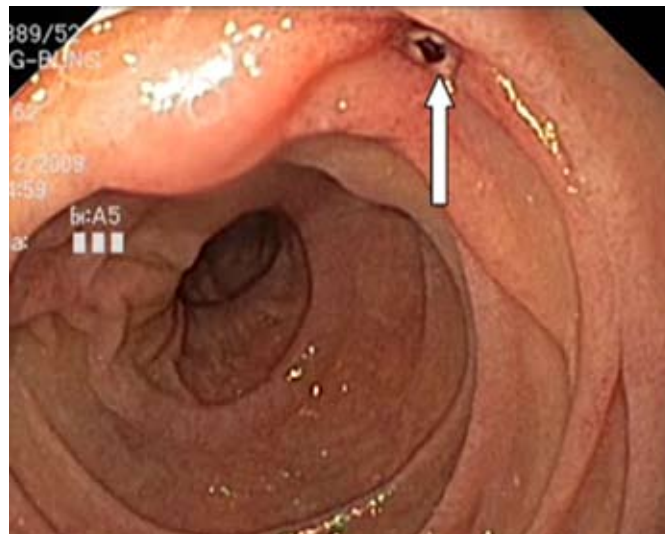


Figure 1 Duodenum contained a fistula with surround swollen mucosa. (arrow)

### Diagnosis:

Pancreaticoduodenal fistula

## Discussion:

After episode of acute pancreatitis, complications such as pancreatic necrosis, duct disruption, pseudocyst and pancreatic fistula could happen in patient who still suffered from abdominal pain. Two most common causes of pancreatic fistula are severe pancreatitis and post operative complication from surgery involving pancreas and nearby structures<sup>1</sup>. Fistulas can develop in the chest ie.pleurae, mediastinum, and subphrenic areas, as well as in the abdomen ie. the stomach, duodenum, colon, spleen, bile duct, and vascular structures<sup>1,2</sup>. Therapeutic options consist of conservative, endoscopic and surgical treatments<sup>3</sup>.

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## Case 16

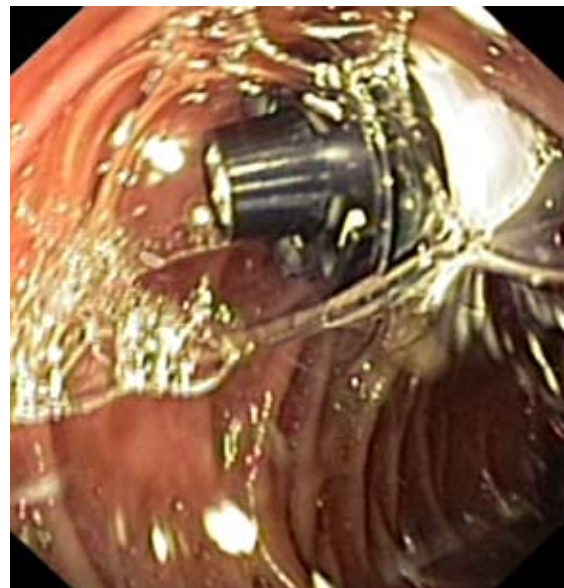
Salyavit Chittmittrapap, MD.

Chatchai Kriengkirakul, MD.

Rungsun Rerknimitr, MD.

A 80-year-old man, presented with upper GI bleeding. Due to his past history on surgery for abdominal aortic aneurysm few months ago, Aortoenteric fistula was a concern. Though EGD, CT angiography and push enteroscopy displayed unremarkable results. Capsule endoscopy was attempted to visualize

the lesion. The first capsule endoscopy result was disappointed as the capsule got stuck in esophagus. We used traditional EGD scope to deliver the capsule down into distal duodenum as shown in the figures. Jejunal angiodysplasias were only the positive findings. Fortunately, he has never bled again.



### Diagnosis:

EGD delivered capsule endoscope

## Discussion:

Capsule endoscopy along with push enteroscopy, double balloon endoscopy, single balloon endoscopy, and spiral enteroscopy are the advanced techniques of small bowel endoscopy field. Capsule endoscopy provides superior diagnostic yield than standard push enteroscopy<sup>1</sup> and contains similar yield and cost-effectiveness when compared with double balloon enteroscopy. Advantage of capsule endoscopy is its non-invasive nature. Yet it has limitation in many subgroups of patients such as 1. children 2. patient who is unable to swallow the capsule 3. altered UGI anatomy 4. gastroparesis and 5. gut obstruction. Apart from special capsule endoscope delivery device<sup>3</sup>, endoscopic placement of the small-bowel video capsule by using the traditional upper endoscopy also yielded a good result; as high as 77%<sup>4</sup>.

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## Case 17

Thawee Ratanachu-ek, MD.

Burin Awapittaya, MD.



Figures 1 and 2

A 70-year-old male known case of post abdominal aortic aneurysmectomy with graft presented with intermittent overt GI bleeding. The previous EGD and colonoscopy were undiagnostic then the third endoscopy was done with double balloon enteroscopy (DBE). DBE was able to detect a bluish extrinsic compression with pulsatile movement (white arrow) (Figure 1, 2). CT scan of the abdomen confirmed the evidence of aortoduodenal fistula with early graft leakage. Patient subsequently underwent an aortic-endovascular graft insertion to control the leakage from fistula.

### Diagnosis:

Aortoduodenal fistula controlled by an aortic stent

### Discussion

The standard approach for aortoenteric fistula is surgical repair<sup>1</sup>. However, non-surgical approach has gained more popularity, fortunately

or unfortunately for the endoscopist, the approach is not via endoscopy, it is an interventional radiological approach. Transfemoral covered stent placement has been reported to be a successful technique to encounter this problem as in this patient<sup>2,3</sup>.

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## Case 18

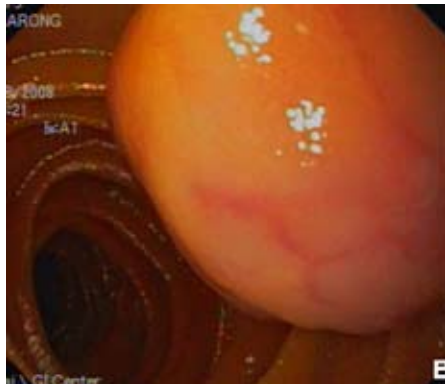
Tanyawat Prangboonyarat, MD.

Supot Pongprasobchai, MD.



A 57-year-old woman had recurrent melena for many times over the last 1 year. She had multiple esophagogastroduodenoscopies and colonoscopies performed but no cause was found. Capsule endoscopy (CE) followed by single-balloon enteroscopy (SBE) was done.

### Endoscopic findings:



CE could capture only 1 frame of a smooth submucosal mass around duodenojejunal junction (arrow, Figure A). SBE showed a 4 cm. smooth round mass covered with normal mucosa at proximal jejunum (Figure B) with a stigmata of recent bleeding (arrow, Figure C).



### Diagnosis:

Gastrointestinal stromal tumor of jejunum

## Discussion:

CE is recommended as first-line investigation in patients with obscure gastrointestinal bleeding (OGIB) due to its sensitivity and noninvasiveness<sup>1, 2</sup>. Its main disadvantage is the inability to take biopsy or to perform therapeutic intervention. It was suggested that performing CE before push enteroscopy was a more effective strategy than beginning with push enteroscopy<sup>3</sup>. However, meta-analysis showed that CE could miss small bowel tumor in up to 19% of the cases<sup>4</sup>. The reason why CE often miss small tumor is unclear. Thus, patient with negative CE who remains having rebleeding should undergo small bowel enteroscopy.

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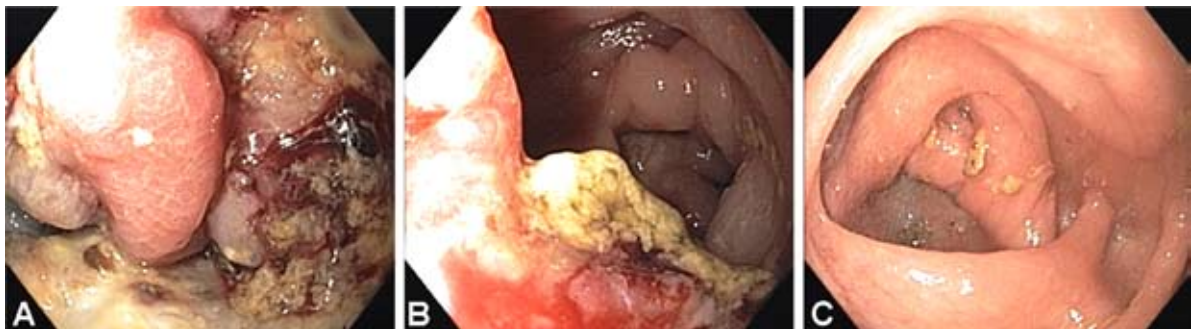


## Case 19

Pimsiri Sripongpun, MD.

Supot Pongprasobchai, MD.

A 36-year-old previously healthy woman presented with right upper quadrant abdominal pain for 2 months. The pain developed 10-15 min. after meals, accompanied with passing more frequent stool 2-3 times a day with was related with meal. There was a progressive abdominal distension for 2 weeks. Esophagogastroduodenoscopy (EGD) was done.



### Endoscopic findings:

A large circumferential infiltrative mass was seen at duodenal bulb (Figure A). After passing the scope carefully beyond the mass (Figure B), the scope entered the colon. Colonic mucosa and haustration came to the view. Caecum and ileocaecal valve were identified (Figure C).

### Diagnosis:

Duodenal carcinoma with duodenocolonic fistula

## Discussion:

Duodenocolonic fistula is an extraordinary rare condition which may resulted from benign or malignant cause. Benign fistula may caused by ruptured duodenal ulcer (most common cause of benign fistula in the past), tuberculous lymphadenitis, Crohn's disease (most common benign fistula nowadays)<sup>1</sup>, typhoid ulceration, complication from ruptured appendicitis or cholecystitis and in the ERCP era, may cause by biliary stent migration<sup>2</sup>. Malignant fistula is more common than benign fistula. Colonic cancer, duodenal cancer, gallbladder cancer and metastatic esophageal cancer are reported as the causes of malignant fistula, which typically presented with diarrhea (usually contained pieces

of undigested food) and rapid weight loss<sup>2</sup>. Feculent vomiting may be found in advanced cases. The common site was at the second part duodenum through hepatic flexure or transverse colon.

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## Case 20

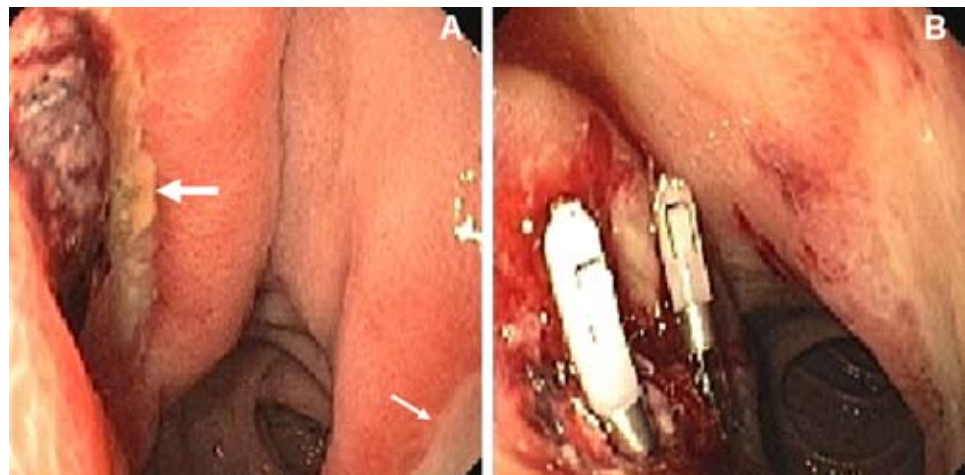
Soros Anuchapreeda, MD.

Supot Pongprasobchai, MD.

A 72-year-old man had a history of diabetes mellitus, hypertension, atrial fibrillation (treated with aspirin 60 mg./day), and hepatocellular carcinoma (HCC) treated with transarterial chemoembolization 10 days ago. He presented with melena for 1 day.

### Endoscopic findings:

Esophagogastroduodenoscopy (EGD) found a 1.5 cm. ulcer with adherent clot anterior surface of duodenal bulb (large arrow, Figure A). Another clean-based kissing ulcer was seen on the opposite wall (small arrow). A 1:10,000 epinephrine injection and hemoclips were applied (Figure B).



One month later, he had melena again and repeated EGD showed a 3 cm. mass at the same site with the previous duodenal ulcer (Figure C). CT scan was correlated and the mass was likely the invasion of HCC to the duodenum (arrow, in Figure D).



## Diagnosis:

**Hepatocellular carcinoma with direct invasion into the duodenum**

## Discussion:

Commonly, HCC can metastasize to lungs, lymph nodes and musculoskeletal system<sup>1</sup> but metastasis to the gastrointestinal (GI) tract was detected in only 3% of the metastasis. GI tract metastasis was reported in stomach, duodenum, and rectum<sup>2</sup>, or by direct invasion of the stomach from an exophytic left hepatic lobe tumor<sup>3</sup>. The endoscopic findings can be a polypoid tumor, submucosal tumor, ulceration or penetrated ulcer.

In patients with HCC who presented with upper GI bleeding, in addition to variceal bleeding,

invasion of HCC to the GI tract must be in the differential diagnoses and reviewing the previous imaging studies before EGD may be helpful.

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