

*Thienchanachaiya P*  
*Aniwan S*  
*Charoensuk K*  
*Pantongrag-Brown L*  
*Poovorawan K*  
*Rerknimitr R*

### CASE 1

A 67-year-old man presented with iron deficiency anemia and congestive heart failure. He had an underlying disease of dilated cardiomyopathy, chronic atrial fibrillation, pulmonary hypertension, and alcoholic cirrhosis diagnosed for 8 years. Physical examination found mild pale conjunctiva and signs of congestive heart failure. Blood tests were compatible with iron deficiency anemia. EGD was performed (Figure 1-9) and argon plasma coagulation was applied at the lesion.

#### Diagnosis:

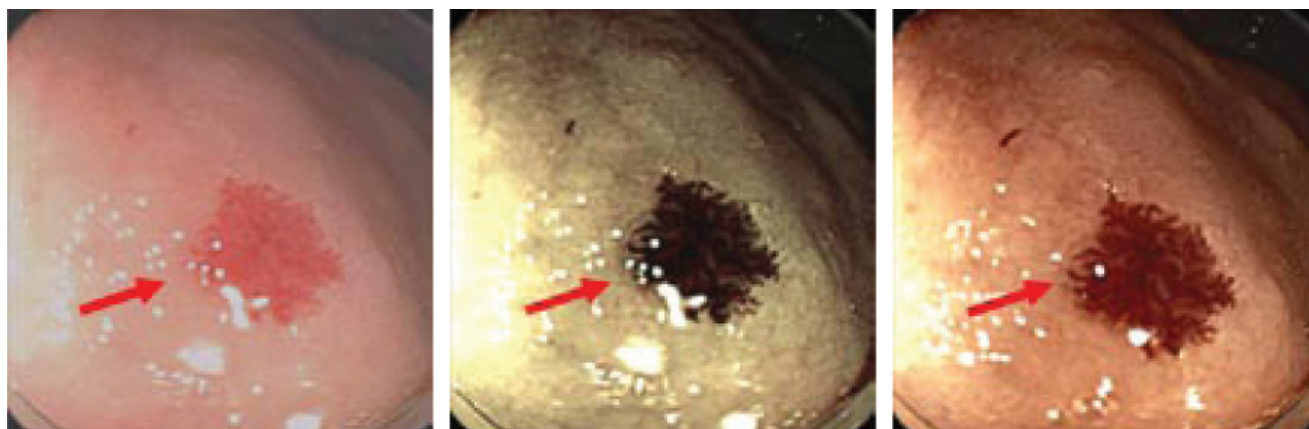
Duodenal angioectasia

#### Discussion:

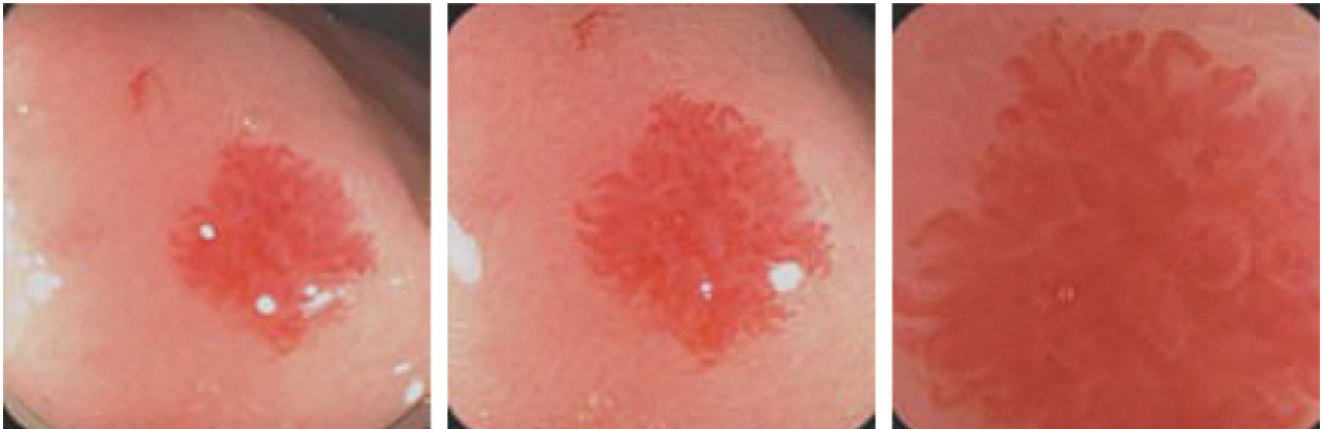
Angioectasia, also named angiodysplasia, are

vascular malformations that can be found throughout the gastrointestinal tract, with the most common site being in the right colon. These lesions may occasionally cause significant bleeding but they are usually found in symptom-free patients. In terms of patient presentation, angioectasias are most common in elderly patients undergoing an evaluation for gastrointestinal bleeding. Angioectasias are proposed to be the result of a degenerative process. The prevalence is estimated to 0.9-3.0% in non-bleeding patients and up to 6% in patients with evidence of blood loss<sup>(1)</sup>.

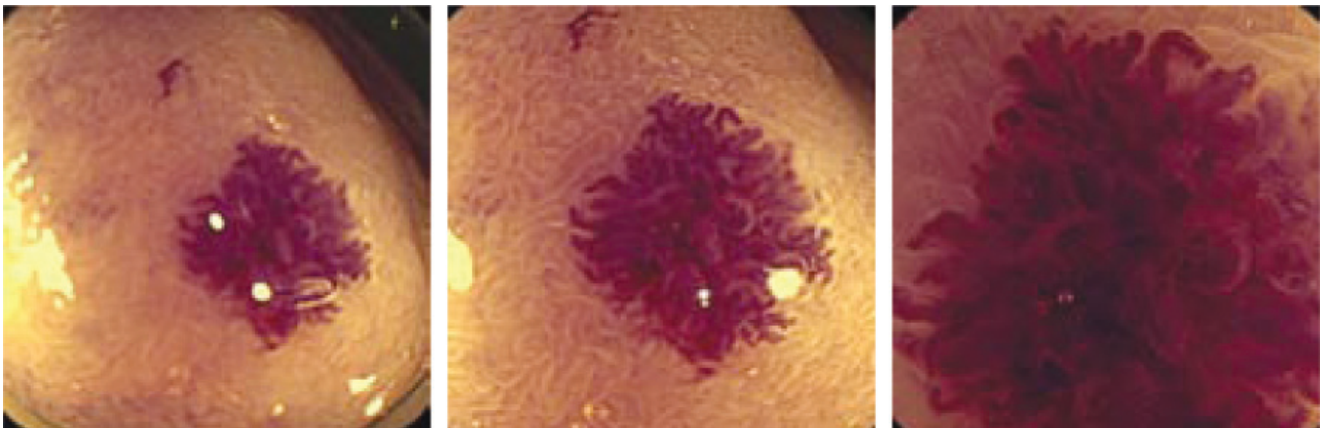
The visibility of vascular ectasias depends on their size, hydration, hemoglobin level, blood flow, and use of narcotic drugs. This case showed the ability of FICE to enhance the appearance of vascular malformation. The vessels appear much darker than the surrounding



**Figure 1-3.** The study showed an isolated angioectasia at duodenal bulb (red arrow), size 1 cm in diameter under white light, FICE station 0 (R525, B495, G455), and station 2 (R550, B500, G470). The lesion appeared more prominent under FICE.



**Figure 4-6.** An angioectasia under white light and at x50 and x100 magnification showed a coral reef-like pattern of small vessels.



**Figure 7-9.** Under FICE Station 9 (R550, B500, G400) and at x50 and x100 magnification, the detail of this vascular lesion was well demonstrated.

mucosa under FICE. The obscure lesion can be made more visualized under FICE<sup>(2)</sup>.

Endoscopic treatments of angiodysplasia are thermal coagulation and argon plasma coagulation (APC). However, APC is more appropriate because the depth of coagulation is usually superficial and angiodysplasia always locates at the mucosal level<sup>(3)</sup>.

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## CASE 2

A 62-year-old woman presented with progressive jaundice and acute cholangitis. She had no history of recurrent epistaxis and no episode of GI bleeding. Physical examination showed icteric sclera with multiple telangiectases at the lower lip (Figure 1).

Computed tomography of the abdomen showed portal AVM with mild intrahepatic duct dilatation secondary to vascular compression (Figure 2A-B). She underwent ERCP that found choledocholithiasis with CBD dilatation and extraluminal compression. EGD

revealed multiple angiodysplasias of gastric antrum, body, and duodenal bulb (Figure 3-8).

### Diagnosis:

Osler-Weber-Rendu disease (Hereditary Hemorrhagic telangiectasia) with portal biliopathy from portal AVM

### Discussion:

Hereditary hemorrhagic telangiectasia (HHT), inherited as an autosomal dominant trait, affects approximately 1 in 5,000 people<sup>(1-4)</sup>. The spectrum of disease extends beyond the telangiectasia/AVM. This disease is diagnosed by the Curaçao criteria which is based on the presence of at least three of four main clinical features: nose bleeding history, mucocutaneous telangiectasia, visceral involvement (pulmonary, cerebral, hepatic and spinal arteriovenous malformation), and affected first degree relative<sup>(1-4)</sup>. Liver involvement consists of extensive intrahepatic vascular malformation associated with blood shunting (arteriovenous, arterioportal and/or portovenous), which leads to significant systemic and hepatobiliary abnormalities. The prevalence of hepatic involvement in HHT was 8-31% in many retrospective studies<sup>(1-3)</sup>. The three



Figure 1. Telangiectasia at lower lip

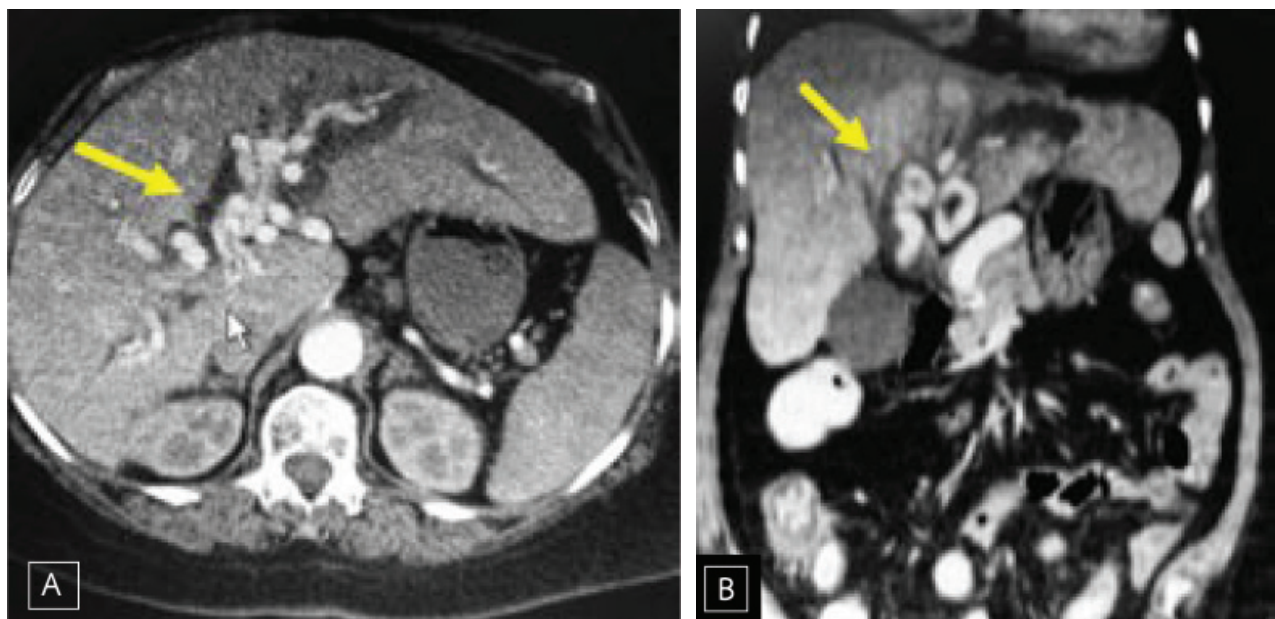
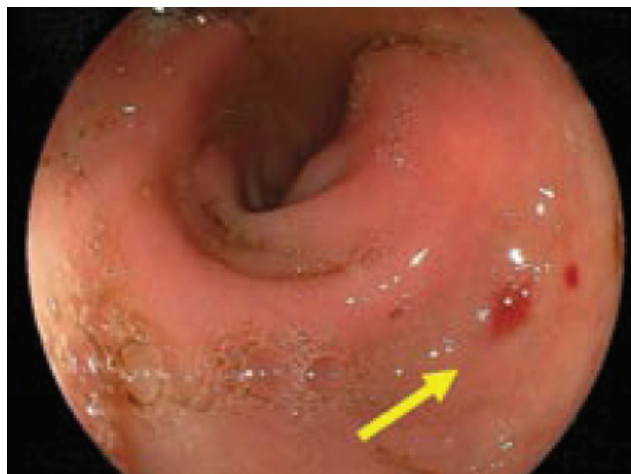
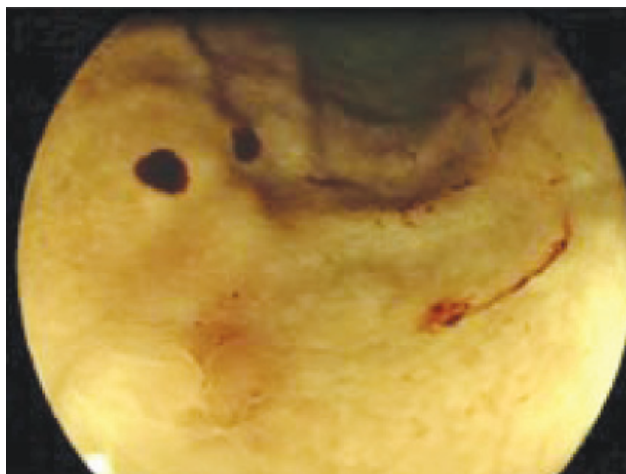


Figure 2A-2B. Portal AVM and dilatation of left intrahepatic duct.

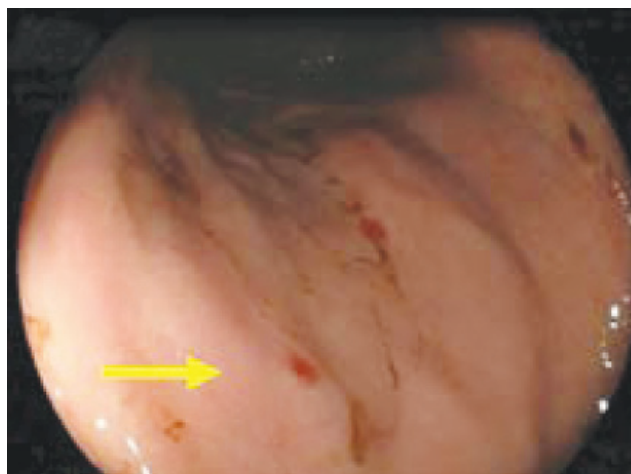




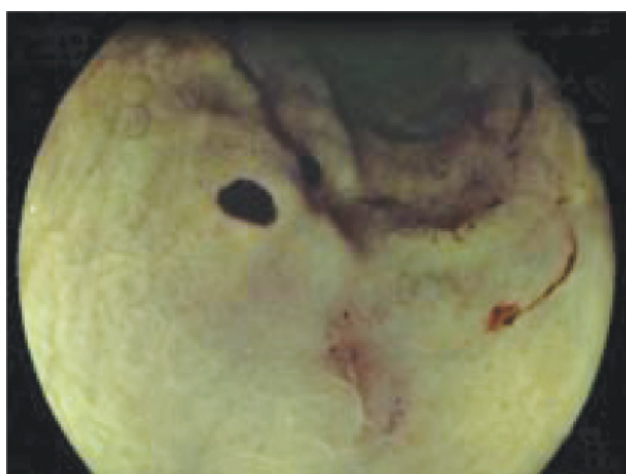
**Figure 3.** Multiple angiodyplasias in gastric antrum



**Figure 6.** FICE image station 5



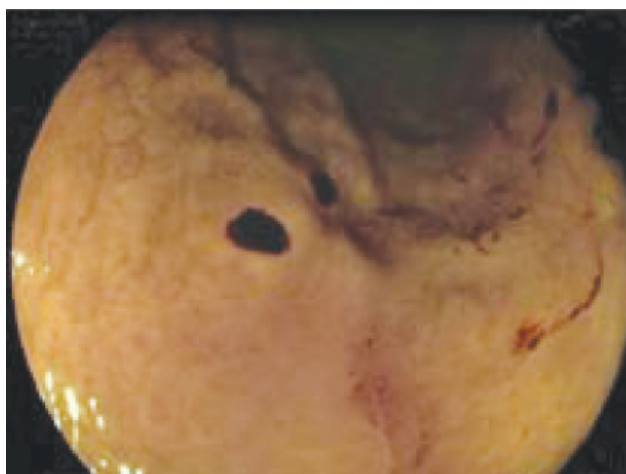
**Figure 4.** Angiodyplasias at lesser curvature of gastric body



**Figure 7.** FICE image station 7.



**Figure 5.** FICE image station 0.



**Figure 8.** FICE image station 8.

most common initial clinical presentations are high-output heart failure, portal hypertension, and biliary disease. Biliary involvement characterized by right upper quadrant pain, cholestasis with or without cholangitis. Imaging studies demonstrates biliary stricture or obstruction from vascular impression, and/or bile cysts<sup>(1-4)</sup>.

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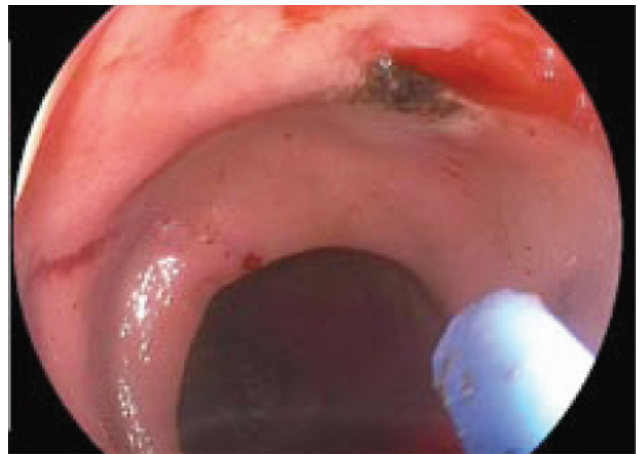
### CASE 3

A 70-year-old woman presented with recurrent hematochezia. She had been diagnosed with dilated cardiomyopathy. She underwent flexible sigmoidoscopy. The endoscopic findings showed a visible vessel surrounded with normal mucosa in the rectum at 5

cm from the anal-verge (Figure 1). After an injection of diluted epinephrine, Argon plasma coagulator (APC) was applied at the lesion. The pulsatile bleeding occurred during applied APC. Hemostasis was achieved successfully (Figure 2-4).



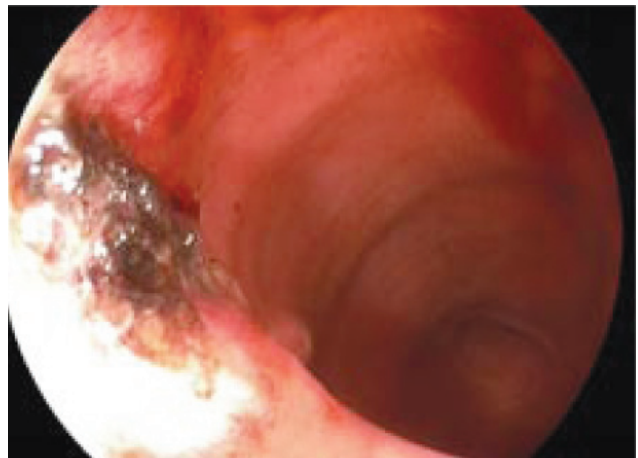
**Figure 1.** A visible vessel surrounded with normal mucosa in the rectum.



**Figure 2.** The pulsatile bleeding developed during applied APC.



**Figure 3.** APC was applied.



**Figure 4.** Post APC.

#### Diagnosis:

Rectal Dieulafoy's lesion

#### Discussion:

Rectal Dieulafoy's is an unusual source of rectal bleeding. Clinical course can be either intermittent or massive rectal bleeding<sup>(1)</sup>. Majority of Dieulafoy's le-

sion occur in a lesser curvature of stomach within 6 cm of the gastroesophageal junction<sup>(2)</sup>. Several effective endoscopic treatment of rectal Dieulafoy's had been reported such as combination of epinephrine injection and coagulation therapy, application of a Hemoclip, and APC<sup>(3)</sup>.

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