# Duodenal arteriovenous malformation: endosonographic diagnosis and coil embolization

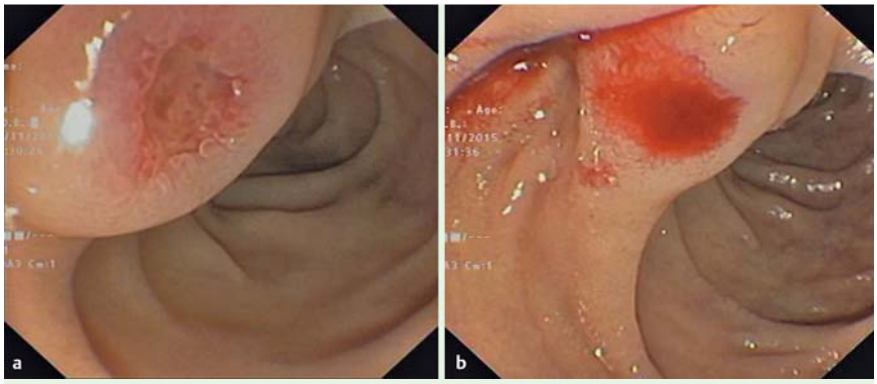


**Fig. 1** **a** Submucosal ulcerated duodenal bulge proximal to the ampulla in a 67-year-old man, seen at side-viewing endoscopy. **b** The actively bleeding lesion in the medial wall of the second part of the duodenum.

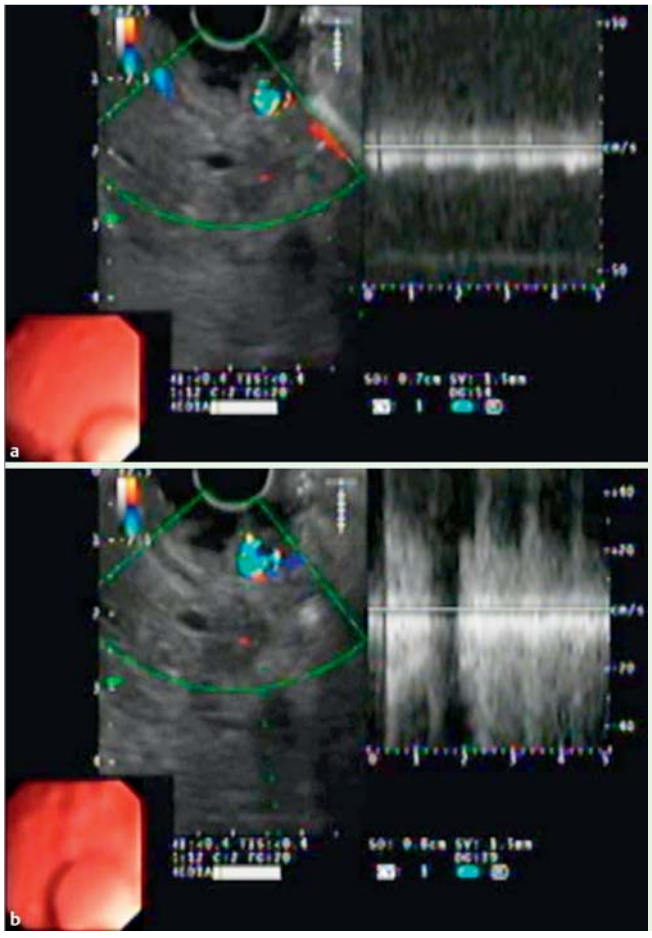
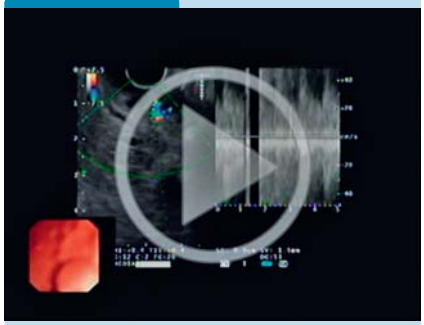


**Fig. 2** Endosonography with color Doppler imaging of the duodenal lesion suggests arteriovenous malformation. **a** Arterialization of the venous spectral pattern. **b** Low resistance arterial flow supplying the arteriovenous malformation.

**Video 1**



Endosonographic appearance of a vascular lesion in the medial wall of the second part of the duodenum showing Doppler signals suggestive of arteriovenous malformation, in a 67-year-old man with a history of melena and a hemoglobin level of 4.8 g/dL.

A 67-year-old man with a history of melena and a hemoglobin level of 4.8 g/dL was referred to our center for endoscopic evaluation. He had no significant comorbidities and his liver and renal functions were normal. His anemia was corrected with multiple blood transfusions. As upper gastrointestinal endoscopy showed fresh blood in the second part of the duodenum, a side-viewing endoscopy was carried out, which revealed a submucosal bulge with ulceration proximal to the ampulla (▶ **Fig. 1a**). Active bleeding from this lesion was noted during endoscopy (▶ **Fig. 1b**). Endosonography with color Doppler imaging showed arterialization of the venous spectral pattern and low resistance arterial flow supplying the lesion, suggestive of arteriovenous malformation (AVM) (▶ **Fig. 2**, ▶ **Video 1**). Subsequent computed tomography (CT) angiography confirmed a 6.1×6.2-mm AVM in the medial wall of the second part of the duodenum (▶ **Fig. 3**). A subsequent angiography showed that this AVM was supplied by branches of the gastroduodenal artery and pancreatoduodenal branches of the superior mesenteric artery with an early draining vein. Superselective coil embolization of branches supplying the AVM was achieved with no residual blush (▶ **Video 2**).

An AVM is a congenital persistent abnormal connection between arteries and veins. Bleeding from AVMs of the gastrointestinal tract is rare. Angiodysplasias/vascular malformations comprise about 5 % of nonvariceal upper gastrointestinal bleeds [1]. Bleeding from an AVM often requires surgical intervention [2]. McCrary et al. describe a case of gastric AVM that was successfully managed by endoclip application and percutaneous transarterial coil embolization [3]. Duodenal AVM can be misdiagnosed as a duodenal varix; Poon & Poon describe such a case, which was managed surgically [4]. Endoscopic ultrasound

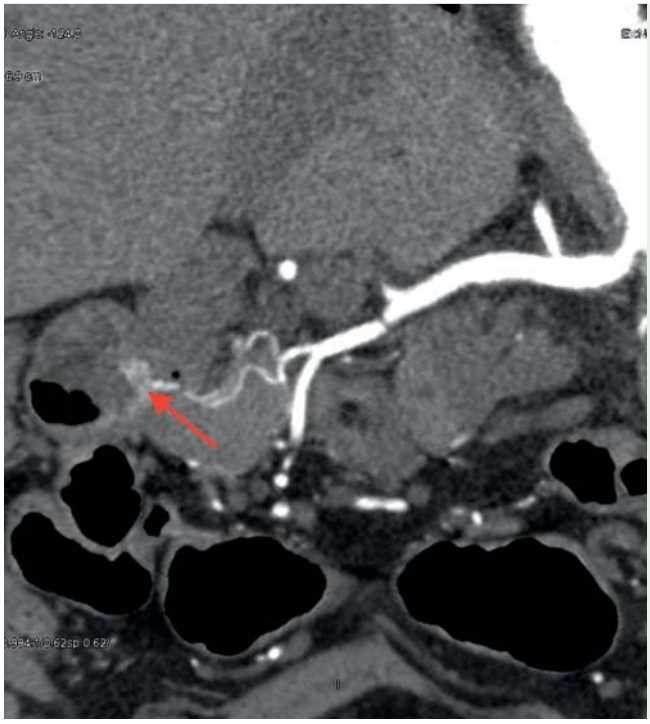
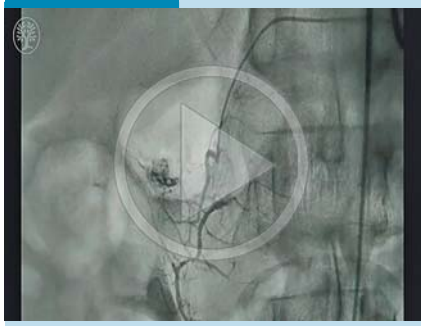


**Fig. 3** Computed tomography angiogram showing the vascular malformation in the duodenal wall (arrow).

**Video 2**



Angiography and coil embolization of branches supplying a duodenal arteriovenous malformation.

with Doppler evaluation is a good imaging modality for characterizing vascular lesions involving the wall of the gastrointestinal tract [5]. Bleeding from duodenal AVMs is extremely rare. This case is unique because of the characteristic appearance of the AVM on endoscopic ultrasound and the successful management by angioembolization.

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**Competing interests:** None

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**Bibliography**

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