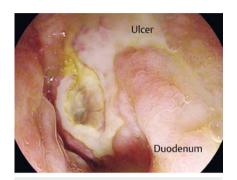
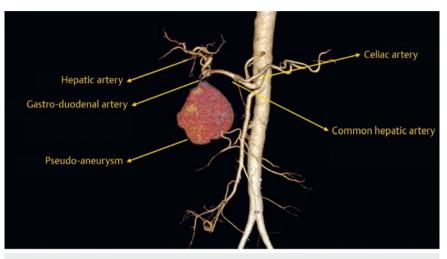
Endoscopic ultrasound-guided coil embolization and thrombin injection of a bleeding gastroduodenal artery pseudoaneurysm



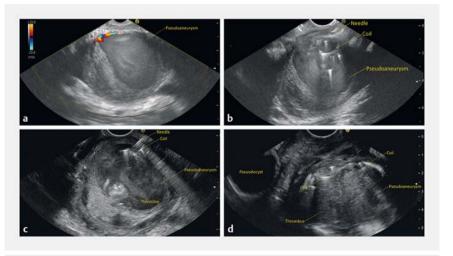
► Fig. 1 Side-viewing endoscopy showed a pulsatile bulge with a large overlying ulcer.

A 50-year-old man had an episode of alcohol-induced acute pancreatitis 1 month before presenting with melena, which required six units of transfused blood for hemodynamic stabilization. After hemodynamic resuscitation, the patient underwent upper gastrointestinal endoscopy. Upper endoscopy showed a bulge with overlying ulceration in the second part of the duodenum. Side-viewing endoscopy showed a pulsatile bulge with a large overlying ulcer (▶ Fig. 1). Abdominal ultrasound showed a pseudoaneurysm of size 3.8×5.6cm arising from the gastroduodenal artery (GDA). Abdominal computed tomography with angiography showed a saccular pseudoaneurysm of size 4×6cm in relation to the GDA (▶Fig. 2). Endoscopic ultrasound (EUS) from the duodenal bulb showed a pseudoaneurysm of size 4.1× 5.8 cm arising from the GDA (► Fig. 3a). Radiological or EUS-guided interventions were considered. The patient selected the option of EUS-quided coil embolization (► Video 1).

Under EUS and fluoroscopy guidance, five 10-mm coils were placed within the pseudoaneurysm through a 19-gauge EUS needle (▶ Fig. 3 b). After coil embolization, contrast injection into the pseudoaneurysm showed partial filling of the



► Fig. 2 Abdominal computed tomography with angiography showed a saccular pseudo-aneurysm of size 4×6 cm in relation to the gastroduodenal artery.



▶ Fig. 3 Endoscopic ultrasound (EUS) images. a EUS from the duodenal bulb showed a pseudoaneurysm of size 4.1 × 5.8 cm arising from the gastroduodenal artery. b Under EUS and fluoroscopy guidance, five 10-mm coils were placed within the pseudoaneurysm through a 19-gauge EUS needle. c 1 mL of human thrombin (500 IU) was injected into the pseudoaneurysm through a 22-gauge needle. d Complete obliteration of the pseudoaneurysm with hyperechoic thrombus with no blood flow.

pseudoaneurysm. Follow-up EUS 1 day after coil embolization showed high flow in the pseudoaneurysm. Around 30% of the pseudoaneurysm was obliterated. On the third day, 6 mL of human throm-

bin (3000 IU) was injected in six boluses of 500 IU each (► Fig. 3 c). After thrombin injection, high velocity flow was confined to the neck and periphery of the pseudoaneurysm. A further 2 mL of





▶ Video 1 Endoscopic ultrasound-guided coil embolization and thrombin injection of a bleeding gastroduodenal artery pseudoaneurysm.

thrombin was injected. Immediately after thrombin injection, color Doppler EUS showed complete obliteration of the pseudoaneurysm (> Fig. 3 d). Repeat EUS 2 weeks later showed a completely obliterated pseudoaneurysm with no flow.

This case shows the practical problems of EUS-guided coil embolization of pseudoaneurysms. Further studies are required regarding the best modality or combination of modalities of EUS-guided treatment of pseudoaneurysms with coils, glue or thrombin.

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Competing interests

None

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