

## Hemospray for arterial hemorrhage following endoscopic ultrasound-guided pseudocyst drainage

An 80-year-old man with alcoholic liver cirrhosis and obstructed jaundice due to a large pancreatic pseudocyst was referred for endoscopic ultrasound (EUS)-guided cystogastrostomy. A computed tomography scan of the abdomen confirmed a 20-cm pancreatic pseudocyst, which was compressing the stomach and biliary tree, as well as a moderate amount of ascites and portal thrombosis with signs of portal hypertension [1]. The platelet count was 70 000/mm<sup>3</sup>. EUS confirmed the large pseudocyst adhering to the stomach wall. Cystogastrostomy was performed, and a double pigtail catheter (10Fr, 10 cm) was placed across the gastrocystic fistula.

After 10 hours, the patient complained of severe hematemesis with a significant drop in hemoglobin. Emergency endoscopy revealed a large amount of blood and clots in the gastric fundus, with active bleeding from a vessel in the margin of the gastric fistula (● Fig. 1). The catheter was not visualized and the fistula appeared to be closed. Adrenalin and fibrin glue were injected with an apparent cessation of bleeding; however, 4 hours later, the patient experienced two episodes of hematemesis of large amount of fresh blood. A second endoscopy was performed and confirmed the active bleeding. A decision was made to apply Hemospray (Cook Medical, Winston Salem, North Carolina, USA), which resulted in immediate hemostasis (● Fig. 2 and ● Fig. 3, ● Video 1). The patient recovered well and no further episodes of bleeding occurred.

Hemospray acts by forming a barrier over the bleeding site and increasing local concentration of clotting factors [1]. Its efficacy has been shown in peptic ulcer bleeding [2], in cancer-related gastrointestinal bleeding, and in patients undergoing antithrombotic therapy [3,4]. These initial reports are very promising in terms of in-

itial hemostasis and rates of rebleeding, but are limited by the small number of published cases.

In the present case, Hemospray was used for very severe bleeding after cystogastrostomy in a patient with liver cirrhosis and portal hypertension, and the need for additional endoscopic or radiologic treatments was obviated simply by spraying the material onto the bleeding vessel.

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**Competing interests:** None

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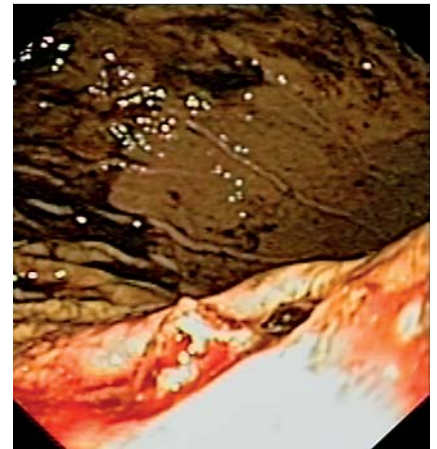
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### Video 1

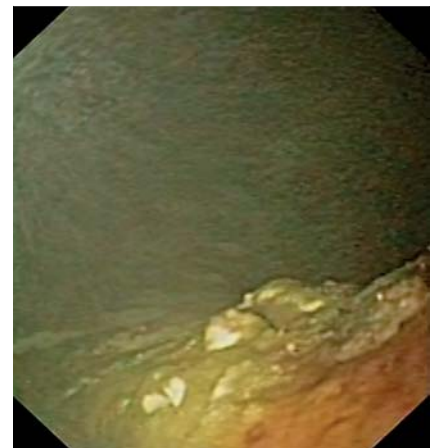
Active bleeding from a vessel in the margin of the gastric fistula was treated by application of Hemospray, which resulted in immediate hemostasis.



**Fig. 1** Active bleeding from a vessel in the margin of the gastric fistula.



**Fig. 2** Endoscopic treatment with Hemospray.



**Fig. 3** Immediate hemostasis after Hemospray treatment.