

## Successful use of Hemospray as a bridge to surgery in life-threatening bleeding from a gastrointestinal stromal tumor of the stomach

A 68-year-old man who was taking acetylsalicylic acid for a previous right occipital stroke was admitted to our hospital for an episode of syncope with subsequent facial trauma and mandibular fracture. The syncopal episode was due to hemorrhagic shock resulting from a massive hematemesis. His initial laboratory data showed the following: hemoglobin level 5.4g/dL, white blood cell count (WBC) 17 620/mm<sup>3</sup> with a normal differential, platelets 118 000/mm<sup>3</sup>, blood urea nitrogen 82 mg/dL, creatinine 1.3 mg/dL, international normalized ratio (INR) 1.28, and he had an admission Rockall score of 6 and a Glasgow Blatchford Score (GBS) of 18.

An urgent esophagogastroduodenoscopy (EGD) was performed using an Olympus

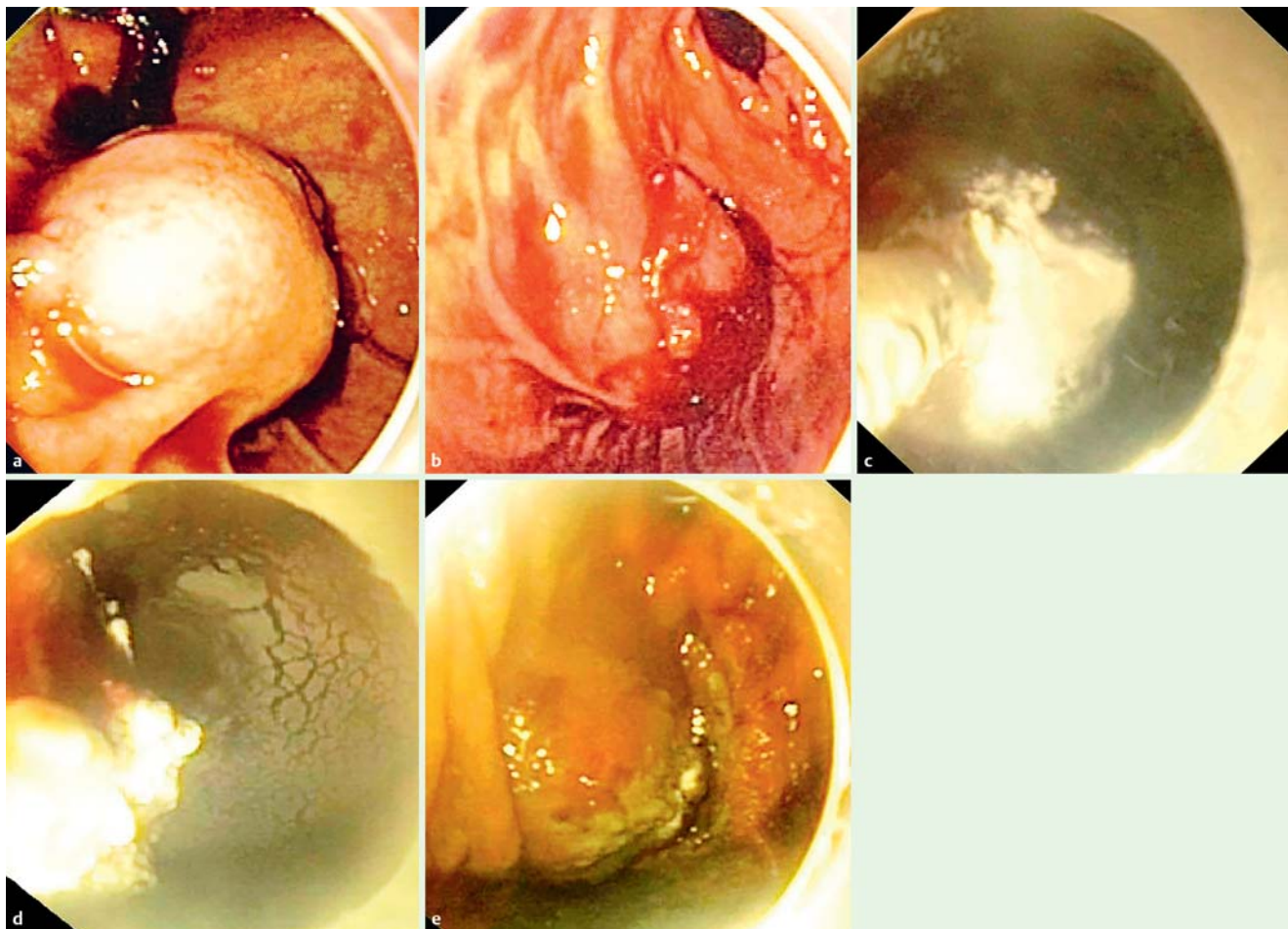
GIF-1TH190 endoscope (Olympus, Japan), which revealed a submucosal lesion of 6 cm in diameter on the gastric fundus with spurting bleeding from a central ulcerated area of the tumor (● Fig. 1 a). Because of the location and shape of the lesion, clips could not be applied, thermal therapy worsened the hemorrhage instead of stopping it, and complete hemostasis was still not observed after injection of 10 mL diluted epinephrine (1 : 10 000) with the aim of slowing the active bleeding (● Fig. 1 b). Therefore, a decision was made to apply Hemospray (Cook Medical, Winston-Salem, North Carolina, USA) using a 10-Fr catheter, which did achieve definitive bleeding control (● Fig. 1 c, ● Fig. 1 d, ● Fig. 1 e; ● Video 1). No follow-up EGD was per-

### Video 1



Hemospray application in a life-threatening bleed from an area of central ulceration in a gastrointestinal stromal tumor (GIST) in the gastric fundus. After failure of thermal therapy and epinephrine injection, Hemospray was applied in short bursts to the active bleeding site with the achievement of complete hemostasis.

formed. No further bleeding occurred until surgery on the 10th day after admission. The patient underwent open wedge resection of the gastric fundus including the tumor with 1.5-cm negative margins (R0 resection).



**Fig. 1** Endoscopic views showing: **a** a gastrointestinal stromal tumor (GIST) in the gastric fundus; **b** ongoing bleeding, after epinephrine injection and thermal therapy, from an area of central ulceration in the GIST; **c, d** endoscopic treatment with Hemospray; **e** complete hemostasis after the application of Hemospray.

Histological examination revealed a gastric gastrointestinal stromal tumor (GIST) with no nodal metastasis. The tumor showed no necrosis or vascular invasion and the mitotic count was 2 per 50 high-power fields (HPFs). The patient had an uneventful postoperative course and remains healthy and disease-free after 2 years of follow-up.

Conventional endoscopic therapy for bleeding gastrointestinal tumors including GISTs is generally not very successful because most tumors are beyond the reach of thermal or mechanical modalities because of their complex angiogenesis [1, 2]. The non-contact nature of Hemospray makes it desirable in situations that involve large neoplastic lesions with complex neoangiogenesis or that are difficult to access meaning they would not otherwise be amenable to standard targeted therapies [1–3]. In conclusion, data reported in the literature on the application of Hemospray in the setting of GIST-related bleeding are limited [1, 2]; however, in our patient this proved to be effective as a bridge to elective surgery and as a salvage modality in the absence of immediate success using conventional hemostatic methods.

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**Competing interests:** None

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