

Use of hemostatic powder in bleeding portal hypertensive gastropathy



Sauid Ishaq, FRCP,^{1,2} Toshio Kuwai, PhD,³ Keith Siau, MRCP⁴

A 55-year-old woman with Child-Pugh B alcoholic cirrhosis and ongoing excessive use of alcohol (50 units/week) presented with hematemesis and melena, hemodynamic instability, acute anemia (hemoglobin 98 g/L), stable hyperbilirubinemia, coagulopathy (international normalized ratio [INR] 1.9), Model for End-stage Liver Disease (MELD) score 22, and Blatchford score of 16. After resuscitation, reversal of coagulopathy, and empirical variceal measures with intravenous terlipressin and gram-negative antibiotics, urgent endoscopy was undertaken (Video 1, available online at www.VideoGIE.org). Gastroscopy excluded gastroesophageal varices but demonstrated widespread oozing in the antrum without a localized bleeding source (Fig. 1), with underlying snakeskin mucosa characteristic of portal hypertensive gastropathy (PHG). In view of the ongoing bleeding despite INR reversal, endotherapy was deemed to be necessary. Hemospray (Cook Medical, Winston-Salem, NC) was applied diffusely throughout the gastric body and antrum, which achieved hemostasis (Figs. 2A-I). Subsequent US showed fatty liver parenchyma, splenomegaly, and sluggish portal vein flow. The patient was given carvedilol and after 30 days had no evidence of rebleeding.

DISCUSSION

Hemospray is a proprietary hemostatic powder, which is licensed in Europe and Canada for the management of nonvariceal upper GI hemorrhage. It achieves hemostasis by absorbing moisture to form a mechanical barrier, and it has the ability to cover large areas with multiple bleeding points without the need for precise targeting of lesions. Before application, the carbon dioxide canister is activated and the endoscope working channel is flushed with air to remove moisture. The supplied 10F catheter is passed down the working channel until approximately 1 cm of the tip is visualized and positioned 1 to 2 cm away from the bleeding site. Contact with blood should be avoided because this may result in clotting of Hemospray within the catheter. Once positioned, Hemospray is applied in multiple bursts of 1 to 2 seconds until hemostasis is achieved.

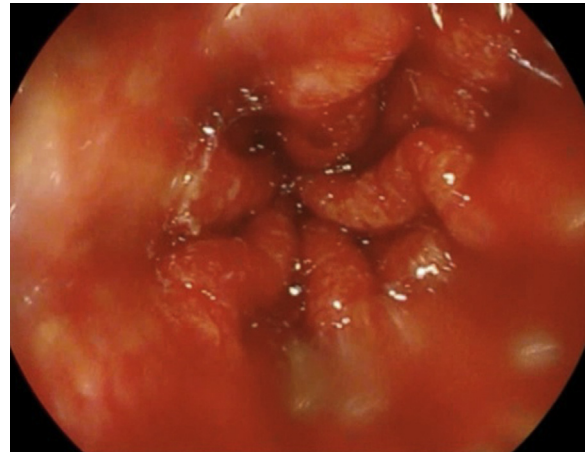


Figure 1. Diffuse bleeding at the gastric antrum.

PHG is a common and potentially fatal adverse event of cirrhosis, with severity correlating with the degree of portal hypertension¹; it is characterized endoscopically by mucosal erythema with a mosaic, snakeskin pattern.² One series reported a prevalence of 80% in individuals with cirrhosis, with an 18-month acute bleeding risk of 2.5% and bleeding-related mortality of 12.5%.¹ There is limited evidence supporting the role of nonselective β -blockers (NSBB) and terlipressin for bleeding PHG.² The Baveno VI portal hypertension guidelines recommend that NSBB be used in the secondary prevention of bleeding PHG and that transjugular intrahepatic portosystemic stent shunt (TIPSS) be considered for transfusion-dependent patients in whom NSBB has failed.³ Because alcohol cessation per se may reduce portal pressures, an effective endoscopic option is required in addition to medical adjuncts to rapidly achieve hemostasis and avoid unnecessary transfusion or TIPSS.

It is arguable that the endoscopic appearances included in this report may be consistent with gastric antral vascular ectasia (GAVE). Indeed, GAVE is often antral predominant, may complicate cirrhosis in up to 30% of cases,² and differs from PHG (Table 1). However, the snakeskin appearance of

Written transcript of the video audio is available online at www.VideoGIE.org.

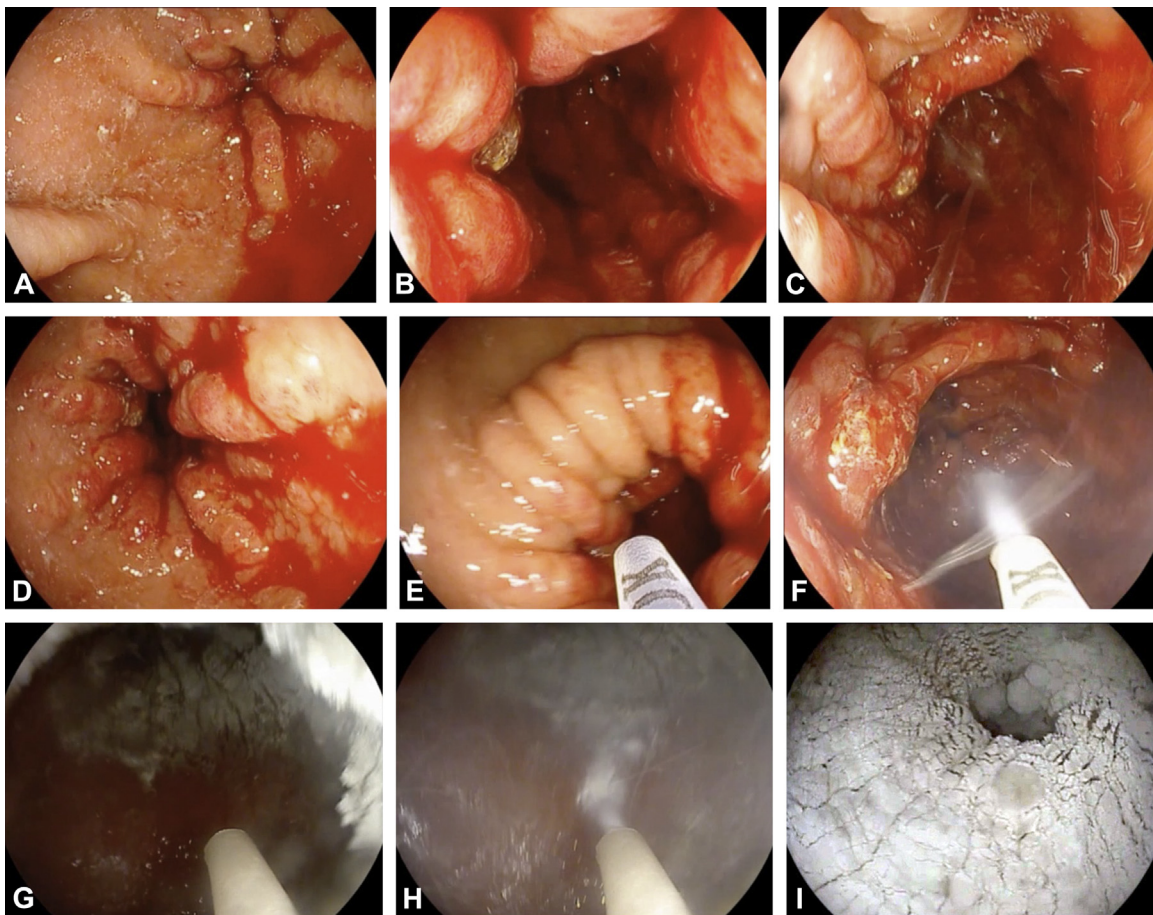


Figure 2. **A,** Brisk oozing from mucosa and snakeskin appearance. **B,** Diffuse bleeding circumferential with no focal point of bleeding. **C,** Water jet to wash the area. **D,** Diffuse bleeding despite washing. **E,** Hemospray catheter tip should be kept dry and advanced until 1 to 2 cm from mucosa, and not in contact with blood. **F,** Hemospray is applied in bursts of 1 to 2 seconds. **G,** After 1 application of Hemospray. **H,** Second treatment. **I,** Hemostasis after application of Hemospray.

TABLE 1. Differences between PHG and GAVE

Factor	PHG	GAVE
Patient factors	Any age, slight male preponderance	Often in >70s and in women
Association with portal hypertension	Strong—approx. 80% Improves with TIPS	Only 30% ⁵ No improvement with TIPS
Pathophysiology	Portal hypertension	Unknown: possibly due to neuroendocrine mediators
Site	Fundus/body	Antrum
Endoscopic pattern	Mosaic (snakeskin) mucosa with red or brown spots	Columns of ectatic vessels in striped (watermelon) or diffuse pattern; erythematous or hemorrhagic
Histology	Ectatic capillaries Mildly dilated mucosal and submucosal veins No vascular inflammation No vascular thrombi	Fibrin thrombi Vascular ectasia Fibromuscular hyperplasia Spindle cell proliferation
Medical therapy	Terlipressin/octreotide (acute) NSBB (secondary prophylaxis)	None
Endoscopic therapy	APC, band ligation, cryotherapy used with limited success Hemospray appears effective	APC, band ligation, radiofrequency ablation and Hemospray all effective at preventing rebleeding
Surgical therapy	Shunt surgery for portal hypertension may be effective Resolves/improves with liver transplantation	Partial gastrectomy for refractory bleeding Resolves/improves with liver transplantation

APC, Argon plasma coagulation; GAVE, gastric antral vascular ectasia; NSBB, nonselective beta blockers; PHG, portal hypertensive gastropathy; TIPS, transjugular intrahepatic portosystemic shunt.

Adapted from Gjeorgjievski et al.²

the underlying mucosa and the presence of cirrhosis led us to favor PHG over GAVE. Before Hemospray, argon plasma coagulation, band ligation, and cryotherapy had been used for bleeding PHG with limited success.² However, the efficacy and safety of Hemospray have now been demonstrated in case series for both PHG and GAVE.^{4,5} Our video case report demonstrates the ease of application and effectiveness of Hemospray in this situation, potentially revolutionizing the endoscopic management of bleeding PHG.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

Abbreviations: GAVE, gastric antral vascular ectasia; INR, international normalized ratio; MELD score, Model for End-stage Liver Disease; NSSB, nonselective β -blockers; PHG, portal hypertensive gastropathy; TIPS, transjugular intrahepatic portosystemic shunt.

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Gastroenterology Department, Dudley Group Hospitals, Birmingham City University, Birmingham, UK (1); St. George's University, Grenada, West Indies (2); Department of Gastroenterology, National Hospital Organization, Kure Medical Center and Chugoku Cancer Center, Kure, Japan (3); Gastroenterology Department, Dudley Group Hospitals, Birmingham City University, Birmingham, UK (4).

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