



Step-by-step use of hemostatic powder: treatment of a bleeding GI stromal tumor

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Hemostatic powder (Hemospray; Cook Medical, Winston-Salem, NC, USA) was recently granted clearance for clinical use by the U.S. Food and Drug Administration for endoscopic therapy of nonvariceal GI hemorrhage (Fig. 1). This device has been in use internationally for more than 5 years, since it became available in 2011, and has been used in more than 70,000 procedures.¹ The powder is an inert, nontoxic material called bentonite, and it is aerosolized with the use of a carbon dioxide canister to deliver the powder through a 7F or 10F delivery catheter. The device is contraindicated in the presence of fistulae or perforation or in patients who are at high risk for perforation.

After identification of a bleeding lesion, blood and fluid should be aspirated from the area as much as possible. The accessory channel of the endoscope is flushed with air, and the delivery catheter may be passed through the endoscope. This is attached to the powder delivery device, which is prepared through tightening the red portion of the handle, which loads and primes the carbon dioxide propellant. A red switch near the tip of the delivery device is moved to parallel the delivery catheter, and the catheter is positioned at least 1 to 2 cm from the target. The red thumb button is then depressed at intervals of 1 to 2

seconds to apply the powder to the lesion. This is repeated until hemostasis is achieved. These steps are illustrated in Video 1 (available online at www.VideoGIE.org).

A patient presented with melena and iron-deficiency anemia from a known GI stromal tumor (GIST) (Fig. 2). He had recently undergone coronary-artery stent placement and ideally required uninterrupted dual antiplatelet therapy for an additional 2 months before definitive surgical management of his GIST. Because he had undergone 3 prior endoscopic hemostasis attempts elsewhere and had required more than 20 units of blood transfused over the prior 4 months, an attempt to temporize his bleeding with hemostatic powder was considered, as shown in Video 1. After the powder was applied, there was immediate and complete cessation of bleeding (Fig. 3). The patient was able to complete an additional 2 months of dual antiplatelet medication without the need for additional blood transfusion or hemostatic procedures. He then underwent successful laparoscopic partial gastrectomy for cure of his GIST.

Although adverse events are uncommon, they include a theoretic risk of bentonite embolization; hence the



Figure 1. Hemostatic powder delivery system and catheters.

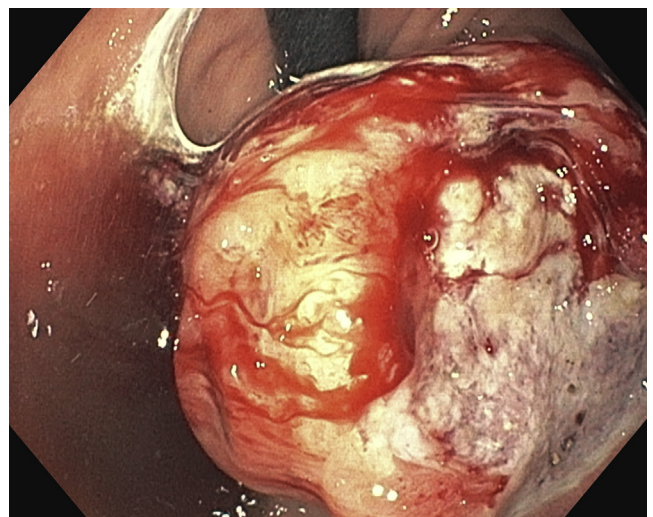


Figure 2. Actively bleeding GI stromal tumor.



Figure 3. Hemostatic powder applied to the bleeding GI stromal tumor, with complete cessation of hemorrhage.

recommendation to maintain at least 1 to 2 cm of distance from the bleeding lesion to prevent powerful intravascular injection. There is also a risk of perforation, as with any endoscopic procedure.² Bowel obstruction from bentonite impaction in the colon has been reported and theoretically may cause biliary obstruction, cholangitis, or both, if used within the bile duct and periampullary duodenum.³ For this reason, it is advised to use no more than 3 devices within a single treatment session.

Most issues with device performance arise as a result of catheter clogging from excess fluid within the delivery catheter. As such, vigorous air flushes may aid in clearing the catheter, or switching to the included second catheter may be prudent. If both catheters are clogged, any hollow-lumen catheter that will attach to the delivery system and fit through the endoscope may be used. Several examples of catheters ideal for this use include a 7F cytology brush catheter with the cytology brush removed from the inner lumen, a 7F Soehendra dilation catheter with the tapered distal tip removed from the catheter, a 7F aspiration catheter with the distal portion containing side-holes removed, or an 8.5F nasobiliary drain catheter with the distal pigtail removed from the catheter. These catheters are also long

enough to be used through the working channel of a colonoscope. When the patient who has recently undergone hemostatic powder therapy is clinically suspected to still be experiencing GI hemorrhage, we advise a low threshold for “re-look” endoscopy, given that the duration of action of the powder is not well described and may be highly variable across different types of bleeding lesions.

In summary, this video shows the step-by-step preparation and use of hemostatic powder for therapy of nonvariceal GI hemorrhage. The device is fairly simple to use for temporizing therapy of GI hemorrhage across a wide variety of lesions, including malignancy-associated bleeding as shown in this video. Further study of hemostatic powder is needed to determine the duration of efficacy, ideal patient characteristics, and comparison against other techniques and devices available for endoscopic hemostasis.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

Abbreviation: GIST, GI stromal tumor.

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