Hemostasis of an actively bleeding lesion at the ileocecal valve by low-pressure endoscopy using the gel immersion technique

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INTRODUCTION

In emergency endoscopy for GI bleeding or colonoscopy without preparation, the visual field can become obscured. The water immersion method is often used, but it is difficult to secure the visual field because the injected water rapidly mixes with blood or stool. Excessive insufflation, especially in the large intestine, may make insertion of the endoscope difficult. In such a situation, gel immersion endoscopy is very effective (Video 1, available online at www.VideoGIE.org).1

GEL IMMERSION ENDOSCOPY

To prevent rapid mixing with blood or stool, we inject clear gel instead of water through the accessory channel after aspiration of residual gas. The viscous gel displaces luminal blood, clots, and residue. Through the clear space created by the gel, we can easily secure the visual field and perform endotherapy calmly and effectively.

We use a jelly-like drink, OS-1 jelly (Otsuka Pharmaceutical Factory, Tokushima, Japan), as the gel in this technique. This is a rehydration supplement for dehydrated patients and includes a gelling agent (polysaccharide thickener), electrolytes (Na⁺ 50 mEq/L, K⁺ 20 mEq/L, and Cl⁻ 50 mEq/L), carbohydrates, and water. Because it is a food supplement, it is considered safe for use within the digestive tract. We also use a BioShield irrigator (US Endoscopy, Mentor, Ohio, USA), which enables additional injection of gel with a therapeutic device through the accessory channel (Fig. 1). The use of a distal attachment makes it easier to concentrate the gel in front of the endoscope.

CASE PRESENTATION

The patient was a 76-year-old woman with a history of chronic kidney disease, chronic heart failure, status post–pacemaker insertion, and mitral valvuloplasty. Medications included warfarin. She was admitted to an outside facility with bloody stool and severe anemia. A plain CT scan showed a high-absorption area in the right colon segment. Although colonoscopy showed bloody fluid in the large...
The source of bleeding could not be identified, and fresh blood flowing from the proximal side was seen in the terminal ileum. EGD showed no significant findings. She was transferred to our hospital with suspected "small intestinal bleeding." Antegrade double-balloon enteroscopy showed no significant findings in the jejunum. We performed retrograde double-balloon enteroscopy using a therapeutic-type scope (EN-580T, Fujifilm, Tokyo, Japan) with a distal attachment (D201-10704, Olympus, Tokyo, Japan). It was difficult to secure the visual field because...

Figure 3. A, A fresh blood clot was found near the ileocecal valve. B, Almost no bloody fluid was found in the ileum.

Figure 4. A, Injecting gel at the cecum revealed an actively bleeding lesion at the lower lip of the ileocecal valve. B, The viscosity of the gel slowed the bleeding, and we could easily achieve hemostasis with clips.

Figure 5. A, Colonoscopy at the previous facility suggested that hyperinflation increased the pressure inside the large intestine, causing bloody fluid to reflux into the ileum. Therefore, fresh blood flowing from the proximal side was seen in the terminal ileum, and the patient was transferred to our hospital with suspected "small intestinal bleeding." B, By using gel to secure the visual field and decreasing the pressure in the large intestine, we could suppress the reflux of blood into the ileum. Therefore, almost no bloody fluid was found in the ileum, and we could easily identify the source of bleeding.
of a large amount of bloody fluid and fresh clots (Fig. 2A). However, injecting gel appropriately, a transparent space was maintained between the tip of the endoscope and the intestinal wall, and insertion while maintaining a good visual field was possible (Fig. 2B). A fresh blood clot was found near the ileocecal valve, but no bloody fluid was found in the ileum (Fig. 3). Injecting gel at the cecum revealed an actively bleeding lesion at the lower lip of the ileocecal valve (Fig. 4A). The viscosity of the gel slowed the bleeding, and we could easily achieve hemostasis with clips (Fig. 4B).

Colonoscopy at the previous facility suggested that hyperinflation increased the pressure inside the large intestine, causing bloody fluid to reflux into the ileum (Fig. 5A). By using gel to secure the visual field and decreasing the pressure in the large intestine, we could suppress the reflux of blood into the ileum and easily identify the source of bleeding (Fig. 5B). In addition, low-pressure endoscopy using the gel immersion technique makes it easier to insert the endoscope and may reduce patient discomfort and pain.

**CONCLUSIONS**

Low-pressure endoscopy using the gel immersion technique facilitates endoscopy without adequate preparation, allowing identification of the bleeding source and establishment of hemostasis.

**DISCLOSURE**

Dr Tomonori Yano holds a patent as one of the inventors of the dedicated gel for this method. Dr Tomonori Yano belongs to the Department of Endoscopic Research and International Education (funded by FUJIFILM Medical and FUJIFILM) and has received honoraria and grants from these corporations. Dr Yamamoto belongs to the Department of Endoscopic Research and International Education (funded by FUJIFILM Medical and FUJIFILM), has a consultant relationship with FUJIFILM Corporation, and has received honoraria and grants from these corporations. All other authors disclosed no financial relationships.

**REFERENCE**

1. Yano T, Nemoto D, Ono K, et al. Gel immersion endoscopy: a novel method to secure the visual field during endoscopy in bleeding patients. Gastrointest Endosc 2016;83:809-11.

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