A case of improved visibility with gel immersion in the presence of ongoing bleeding during colorectal endoscopic submucosal dissection

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During endoscopic submucosal dissection (ESD), it is often difficult to secure a visual field in the presence of ongoing massive bleeding because water, which is injected through the accessory channel to wash out debris and blood clots, rapidly mixes with fresh blood in the lumen. Gel immersion is safe and effective for securing the visual field, creating a space for endoscopic visualization and treatment in patients with ongoing bleeding.[1]

Recently, gel immersion endoscopy was found to be useful for controlling unexpected arterial bleeding during gastric ESD.[2] However, no reports have shown the effectiveness of gel immersion in the presence of ongoing bleeding during colorectal ESD. Here, we present a case of improved visibility with gel immersion in the presence of ongoing bleeding during colorectal ESD.

A 53-year-old woman with positive fecal occult blood test findings underwent conventional colonoscopy, which revealed a nongranular-type laterally spreading tumor, measuring 40 mm in diameter, at the descending colon. Magnifying blue laser imaging showed irregular vessels and surface patterns, classified as Type 2B according to the Japan Narrow-band-imaging Expert Team classification. We endoscopically diagnosed the lesion as intramucosal cancer or cancer with superficial submucosal invasion and performed ESD for this lesion.

After an injection of 0.2% hyaluronic acid solution with indigo carmine, a mucosal incision was performed using a Dual Knife J (Olympus, Tokyo, Japan). After a full circumferential mucosal incision, sufficient traction with the S-O clip (Zeon Medical Co, Tokyo, Japan)[3] allowed visualization of the tissue cutting line of the submucosal layer (Fig. 1). Stable submucosal dissection for mild fibrosis beneath the lesion could be performed (Fig. 2). However, large vessels were injured accidentally during this procedure. We attempted hemostasis with forceps, but the points of bleeding were not visible because of rapid blood collection. Continuous water injection enabled transient visualization, although water and blood mixed immediately, leading to insufficient visualization (Fig. 3).

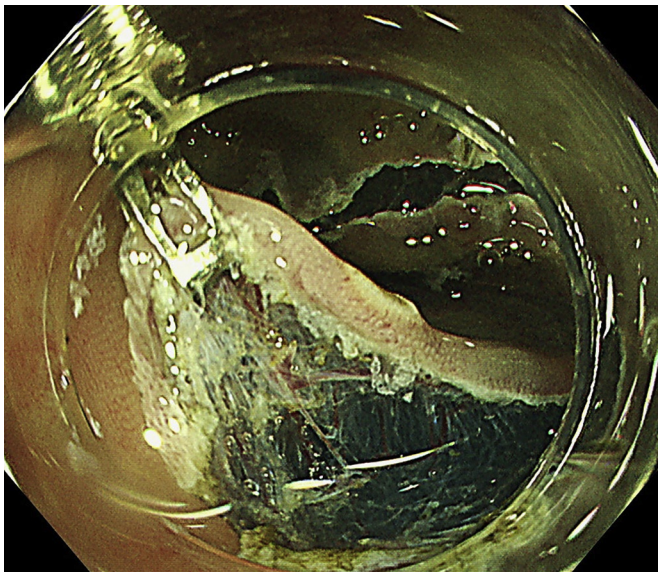

Figure 1. The lesion is pulled up to the opposite side of the colonic wall by an S-O clip. Sufficient traction on the lesion allows visualization of the tissue cutting line of the submucosal layer.

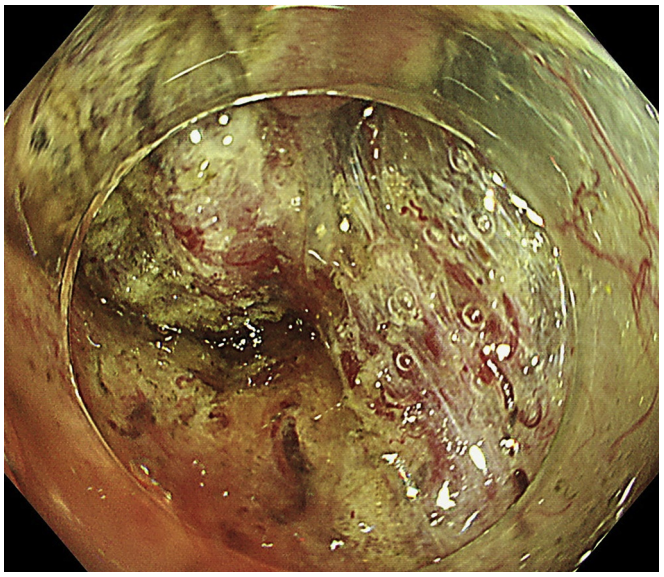

Figure 2. Mild fibrosis and vascular network in the submucosa. Mild fibrosis and a vascular network are observed beneath the center of the lesion.

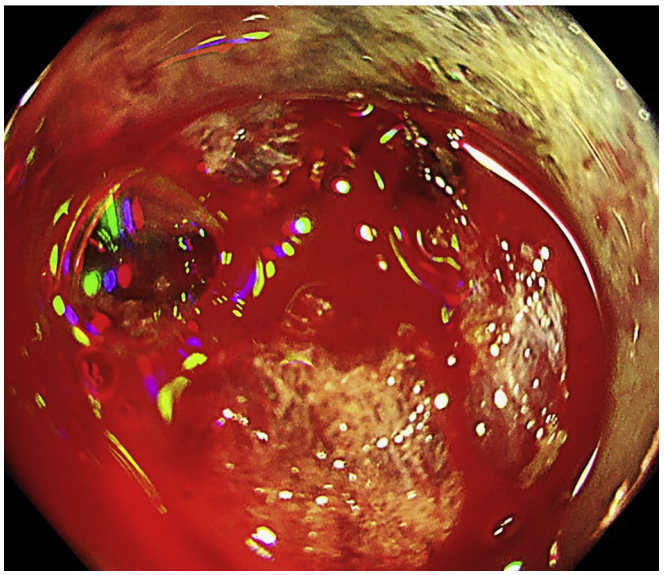

Figure 3. Immediate bleeding during endoscopic submucosal dissection. The injected water mixes instantaneously with blood, making it difficult to secure a clear visual field.

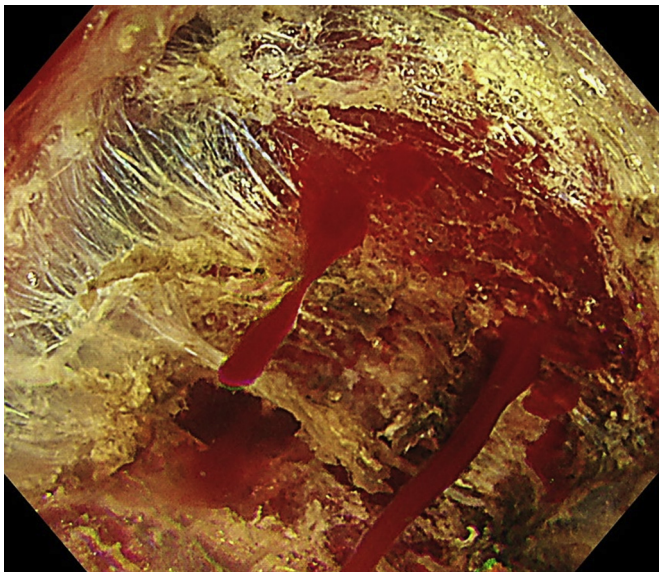

Figure 4. Use of gel immersion endoscopy. After gel injection, it becomes easier to secure the visual field, and hemostasis is achieved.

After continuous gel injection (VISCOCLEAR; Otsuka Pharmaceutical Factory, Tokushima, Japan), we could identify multiple points of bleeding (Fig. 4). After each point was grasped with forceps, we applied electrocoagulation using bipolar electrocoagulation Tighturn devices (Zeon Medical Co) and achieved hemostasis. Finally, after hemostasis, the lesion was resected en bloc with no adverse events. Histopathologic diagnosis revealed well-differentiated adenocarcinoma invading the submucosa.

When air insufflation or water immersion can secure an effective visual field, gel immersion becomes unnecessary.

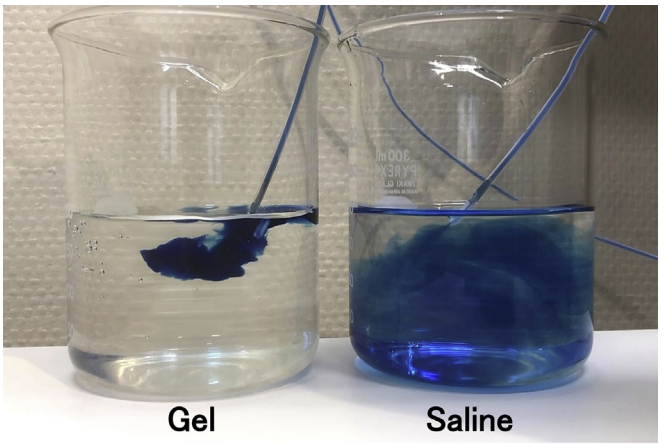

Figure 5. Comparison of indigo carmine injection into gel and saline solution in vitro. The container on the left is filled with gel, and the container on the right is filled with saline solution. Indigo carmine solution, which is assumed to be blood, is infused simultaneously. In the saline solution, the indigo carmine solution diffuses at once, whereas in the gel, the fluidity and diffusivity of the indigo carmine solution are suppressed.

However, difficulty in securing an effective visual field with these techniques warrants the use of gel immersion for endoscopic visualization. Because the gel has viscoelastic properties that suppress the spread and flow of blood, a physically transparent space can be secured in front of the endoscopic field of view, and a good field of view can be obtained (Fig. 5).

Gel immersion is effective in a narrow lumen, where it is easy to collect water, blood, and gel.[1] In ESD, it is easy to maintain gel collection because of the space beneath the lesion, enabling identification of the point of bleeding and management with hemostatic forceps. Hemostasis is also facilitated because the viscous gel slows bleeding. In addition, VISCOCLEAR, the gel used in this case, is composed of xanthan gum, locust bean gum, concentrated glycerin, and purified water and was originally prepared for patients with dehydration and dysphagia. Therefore, this gel is safe to use in the GI tract.

In conclusion, we present a case of improved visibility with gel immersion in the presence of ongoing bleeding during colorectal ESD. Gel immersion endoscopy may ease hemostasis during colorectal ESD and should be considered as an endoscopic treatment option in the colorectum (Video 1, available online at www.giejournal.org).

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviation: ESD, endoscopic submucosal dissection.

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