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A novel method, gel immersion endoscopic injection sclerotherapy, may make the procedure easier and more accurate

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Esophageal varices are caused by portal hypertension such as cirrhosis. Ruptured esophageal varices cause massive bleeding; therefore, preventive hemostasis is important. The standard procedures to prevent bleeding include endoscopic variceal ligation (EVL) and endoscopic injection sclerotherapy (EIS). EIS is a more difficult procedure than EVL but results in a lower recurrence rate and is more curative. In particular, problems are often faced in the process of inserting a needle into esophageal varices and injecting sclerosing agents into the vessel. Gel immersion endoscopy is a useful method for securing a visual field [1]. Additionally, a lower level of intraluminal pressure and wall tension is maintained [2] and the vessel lumen is kept thicker and wider than that during gas emersion (▶ **Fig. 1**). Therefore, EIS with a "Viscoclear" gel (Otsuka Pharmaceutical Factory, Tokushima, Japan) may allow easier needle insertion and sclerosing material injection into esophageal varices.

Herein, a 73-year-old man was admitted to a psychiatric hospital for schizophrenia. Upper gastrointestinal endoscopy revealed F2 or larger esophageal varices that required treatment, and he was transferred to our hospital for prophylactic hemostasis (▶ **Video 1**). We performed EIS of the esophageal varices using gel immersion endoscopy. Under the gel, the vessels were thicker due to the lower pressure in the esophageal lumen (▶ **Fig. 2**), and ultrasound endoscopy confirmed that the vascular lumen remained circular (▶ **Fig. 3**). We were able to puncture the vessel under the gel and inject sufficient sclerosing agent. A total of 600 mL of gel was used and the procedure time was 4 min. No irrigation accessories were used. Gel-immersion EIS may be useful as it makes the puncture process easier and more accurate.

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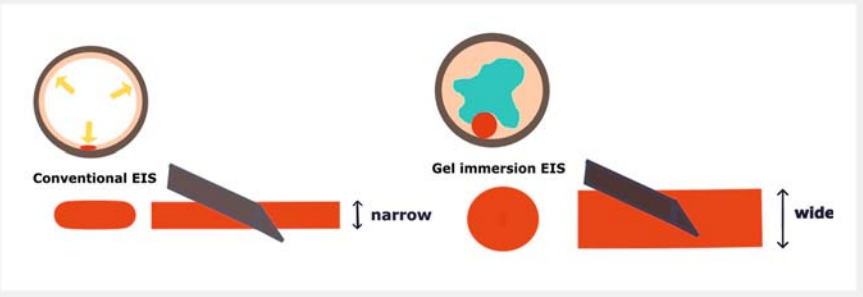
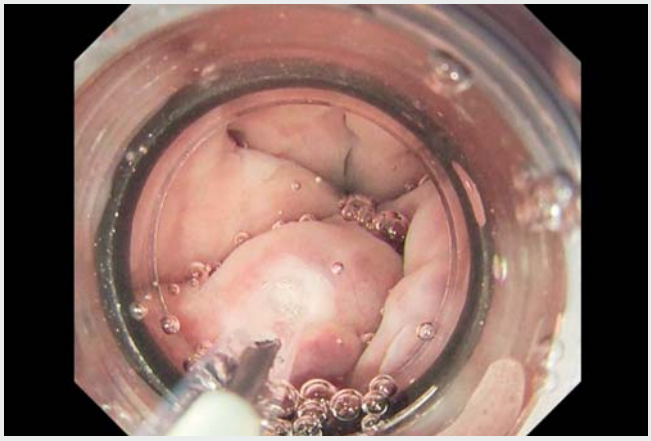


▶ **Fig. 1** Gel immersion allows for lower levels of intraluminal pressure and maintenance of wall tension, while the vessel lumen is kept wider than during gas emersion.



Video 1 Gel-immersion endoscopic injection sclerotherapy (EIS) may be useful because it makes the puncture process easier and more accurate.

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Competing interests

The authors declare that they have no conflict of interest.

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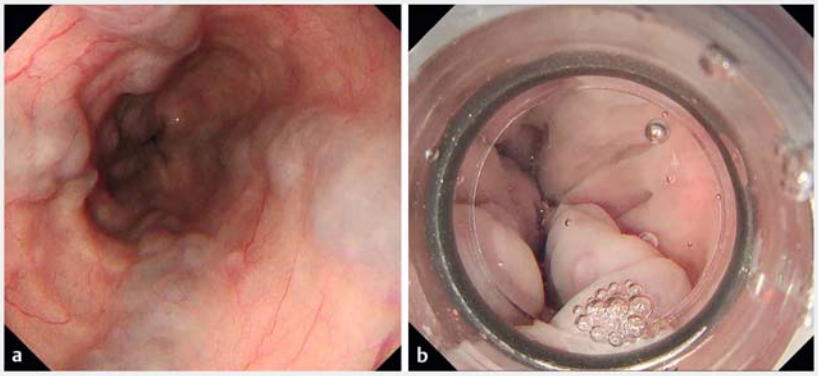

▶ **Fig. 2** Endoscopic images showing esophageal varices. **a** Gas immersion endoscopy showing multiple esophageal varices. **b** Gel immersion endoscopy showing the varices as widely dilated.

▶ **Fig. 3** The endoscopic ultrasonography image and schema. Under the gel, the blood vessels present a circular shape and preserve the lumen.

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