

## Endoscopic band ligation and over-the-scope clip placement for refractory bleeding of Dieulafoy ulcer in the jejunum

A 68-year-old man, who underwent surgery for gastric cancer (distal gastrectomy and Billroth I reconstruction) in the past and was taking dabigatran 15 mg orally because of brain infarction, came to our hospital with a chief complaint of lightheadedness. He had marked anemia (hemoglobin 5.6 g/dL). Endoscopy detected bleeding from a Dieulafoy ulcer in the upper jejunum. A clip was applied to stop the bleeding (► **Fig. 1 a, b**).

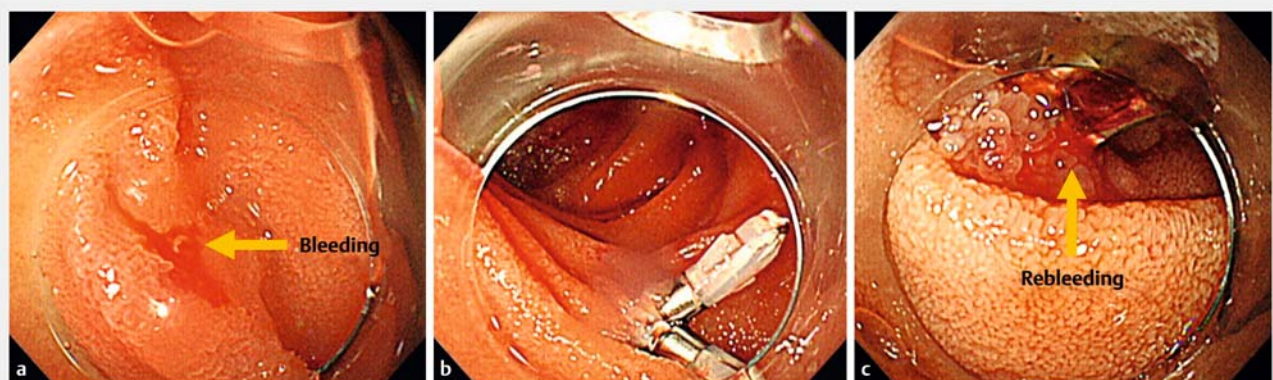
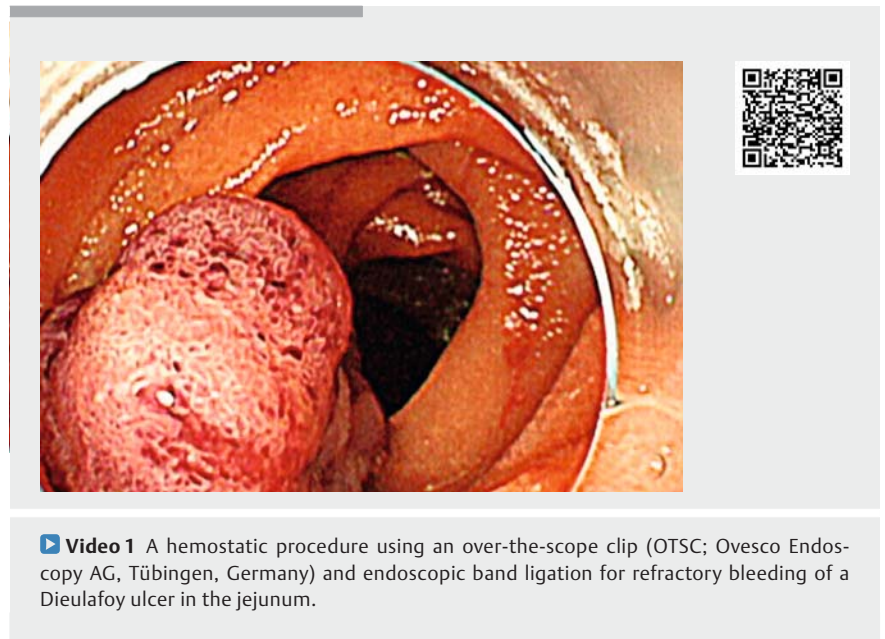
Thereafter, rebleeding occurred three times despite clip placement for hemostasis (► **Fig. 1 c**).

As the patient repeatedly bled, he was hospitalized to receive elective hemostasis by an over-the-scope clip (OTSC; Ovesco Endoscopy AG, Tübingen, Germany) 2 months after the 4th clipping. Endoscopy found that the clip had fallen off the lesion, which was oozing blood. We applied the OTSC. However, bleeding continued. We then performed endoscopic band ligation (EBL) right above the OTSC, and hemostasis was finally achieved (► **Fig. 2**, ► **Video 1**). Upper gastrointestinal endoscopy performed 1 month later confirmed scarring of the lesion (► **Fig. 3**). Clipping using an OTSC is effective as first-line and second-line treatment for peptic ulcers [1,2]. The hemostasis rate

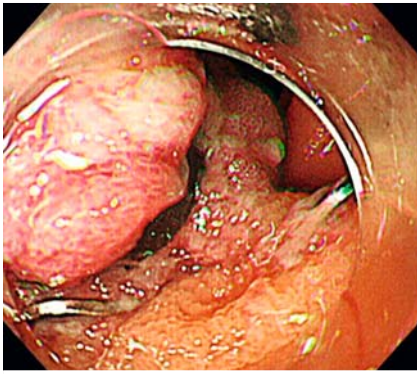
with OTSC is reported to be 64.7%–100% [3]. In some cases, EBL will incorporate even the muscularis propria and serosa of a lesion, with a high risk of perforation reported for lesions in the small intestine [4,5]. In the present case, we performed EBL right above the OTSC. We ligated the blood vessel safely by this method because the OTSC prevented EBL from including deep muscular layers of

the lesion. In the future, this method may become an effective approach for gastrointestinal bleeding that is difficult to stop. To our knowledge, this is the first report of hemostasis using EBL in addition to an OTSC, and may be a valuable method of treating refractory gastrointestinal bleeding.

Endoscopy\_UCTN\_Code\_TTT\_1AO\_2AD



► **Fig. 1** Endoscopic images. **a** Bleeding was detected from a Dieulafoy ulcer in the jejunum. **b** A clip was applied to stop the bleeding. **c** Rebleeding occurred despite clip placement.



► **Fig. 2** Endoscopic band ligation was performed right above the over-the-scope clip (OTSC; Ovesco Endoscopy AG, Tübingen, Germany) and hemostasis was finally achieved.



► **Fig. 3** Scarring of Dieulafoy ulcer in the jejunum was confirmed.

## Competing interests

The authors declare that they have no conflict of interest.

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*Endoscopy* 2021; 53: E85–E86

DOI 10.1055/a-1195-1795

ISSN 0013-726X

published online 26.6.2020

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Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany

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