

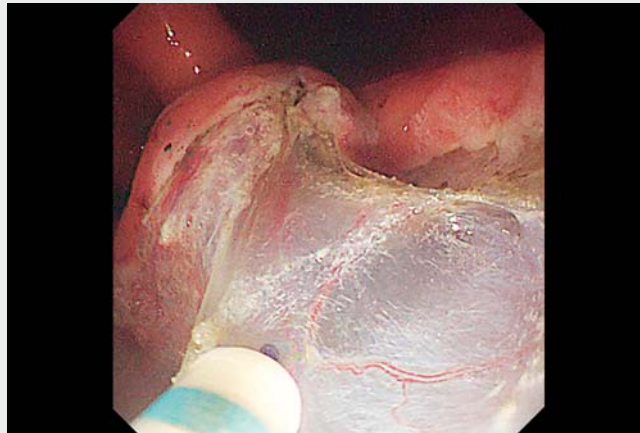
## Inner countertraction facilitating endoscopic submucosal dissection of a difficult early gastric cancer independent of transparent cap

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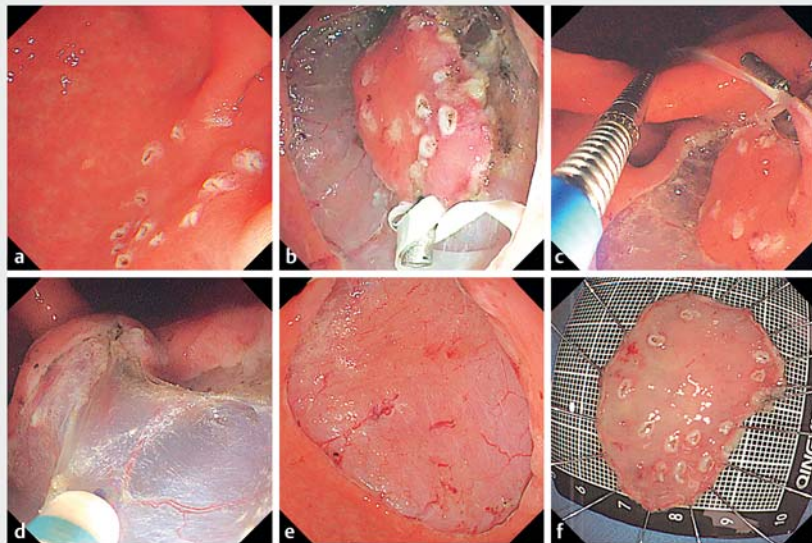
Endoscopic submucosal dissection (ESD) has been applied widely for treatment of early gastric cancer (EGC) [1]. However, for difficult locations, the submucosal vision is often unclear, resulting in prolonged operation time as well as increased risk of bleeding and perforation. Inner countertraction allows for safe and speedy dissection in the colon [2] but not in the stomach. Here, we developed a preliminary inner countertraction method to facilitate ESD of EGC in difficult locations (▶ **Video 1**).

A 58-year-old woman was diagnosed with EGC on the posterior wall of the gastric antrum (▶ **Fig. 1 a**) by chromoendoscopy. Contrast-enhanced computed tomography showed no lymph node involvement. Endoscopic treatment was applied. The mucosa of the lesion was incised circumferentially using a Dual-Knife, after which a hemostatic clip was used to fix a rubber ring to the anal edge of the resected lesion (▶ **Fig. 1 b**). Another clip was used to pick up the rubber ring and place it on the opposite gastric anterior wall (▶ **Fig. 1 c**). The tension generated by the reverse traction made the anatomical structure of the submucosa clearly visible, thus shortening operation time and helping to avoid damage to large blood vessels (▶ **Fig. 1 d**) and muscularis propria (▶ **Fig. 1 e**). With this clear surgical view, the lesion was smoothly and quickly dissected. After the operation, the clip fixed on the opposite side of the lesion was removed with foreign body forceps and was extracted together with the surgical specimen (▶ **Fig. 1 f**). There were no complications such as bleeding or perforation during the operation.

Unlike other external traction methods for the stomach such as forceps [3], clip-with-line traction [4], and magnet anchors [5], the advantages of this inner countertraction technology include easy



▶ **Video 1** Inner countertraction facilitating endoscopic submucosal dissection of a difficult early gastric cancer independent of transparent cap.



▶ **Fig. 1** Inner countertraction facilitating endoscopic submucosal dissection of a difficult early gastric cancer independent of transparent cap. **a** Endoscopic view of the lesion in the gastric antrum. **b** The first hemostatic clip grasping a rubber ring was attached to the anal edge of the lesion. **c** Endoscopic view of the lesion after countertraction. **d** The submucosal blood vessels were well exposed. **e** There was almost no bleeding on the wound. **f** The resected mucosa measured about 3 cm in diameter.

preparation, relative safety, low cost, little interference, and avoidance of repeated withdrawal and reinsertion of endoscopes during surgery. In addition, because this method helped eliminate the transparent cap, the problems of visual field loss and visual field disturbance by fluid retention in the transparent cap were avoided.

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### Competing interests

The authors declare that they have no conflict of interest.

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