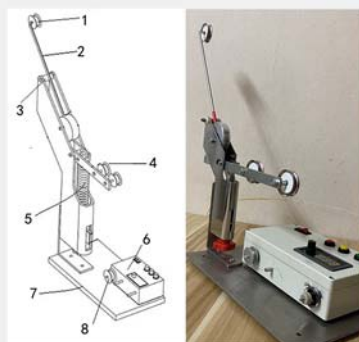


A novel extracorporeal accessory traction device for gastric endoscopic submucosal dissection

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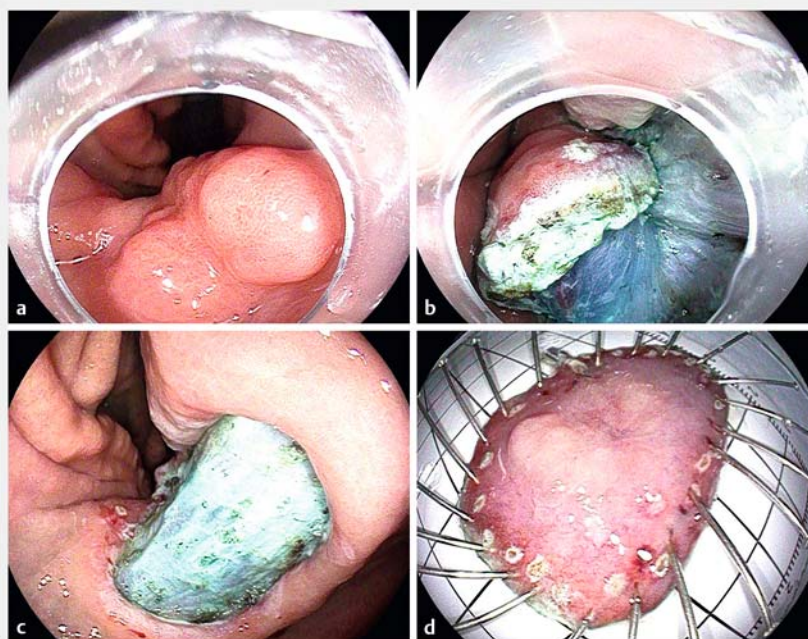


► **Fig. 1** The extracorporeally controlled traction device consists of an adjustable power unit (6), mechanical arms (2, 3), pulleys (1, 4, 8), and a spring (5) that provides traction to the mechanical arms.

For early gastric cancer, endoscopic submucosal dissection (ESD) has been established as a standard treatment. However, ESD is associated with several complications, such as bleeding and perforation, which makes ESD difficult for entry-level operators [1]. A clear surgical view can reduce the occurrence of complications, shorten the operating time, and reduce the difficulty of the operation. As a result, various traction methods and devices have been developed and used during ESD [2]. The first author has developed a novel extracorporeal accessory traction device for gastric ESD, which in our opinion can make it easier and safer.

The extracorporeal part of the traction device consists of an adjustable power unit, mechanical arms, pulleys, and a spring that provides traction to the mechanical arms (► **Fig. 1**).

In the case described here, a flat lesion (IIa, 20 mm in diameter) was located in the gastric angle (► **Fig. 2**). Circumferential mucosal incision was performed first. Then, a line from the traction device was attached to an endoclip extracorporeally,



► **Fig. 2** Endoscopic submucosal dissection (ESD) of a gastric lesion using the extracorporeal traction device. **a** A flat lesion (IIa, 20 mm in diameter) in the gastric angle. **b** The submucosal layer was fully exposed with the help of the externally controlled traction device. **c** Condition after ESD. **d** The resected specimen.



► **Video 1** Endoscopic submucosal dissection (ESD) of a gastric lesion using a novel extracorporeally controlled traction device.



and the endoclip was then applied to the caudal margin of the incised mucosa. Next, we used a remote control to activate the power unit to provide suitable tension. In this way, the submucosal layer was fully exposed, and the lesion was completely dissected (► **Video 1**) The total duration of the operation was about 36 minutes, including 3 minutes for the instillation of the traction system and 10 minutes for submucosal dissection. The pathological diagnosis of the lesion was gastric high grade intraepithelial neoplasia. No consequent complications occurred after the operation. In our experience the extracorporeally controlled traction device is highly automated, easy to install, and convenient to operate; it also provides continuous and adjustable traction, which can allow good visualization of the submucosa and avoid mucosal damage. Therefore, in our opinion, the novel extracorporeally controlled traction device makes ESD easier and safer.

Endoscopy_UCTN_Code_TTT_1AQ_2AD

Competing interests

Dr. Ru-yuan Li holds the patent for and the intellectual property rights to the traction device described in this report.

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