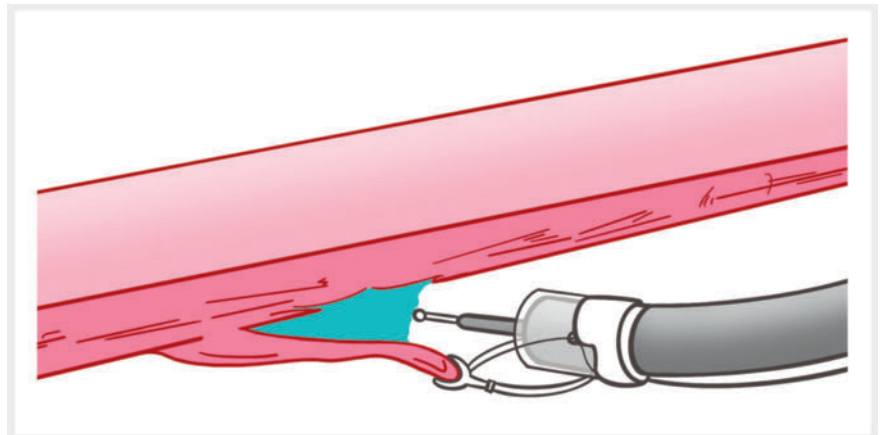


Endoscopic submucosal dissection of early gastric angle cancer by using a simplified robot-assisted device for traction

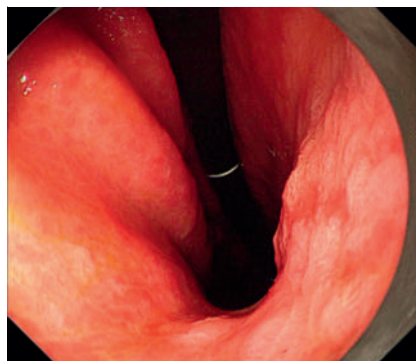
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Endoscopic submucosal dissection (ESD) is the standard technique for resection of gastric superficial tumors. However, in difficult locations of the stomach, a vertical approach toward the muscular layer is always unavoidable and results in a higher risk of damage [1]. To help address these issues, we designed a flexible auxiliary single-arm transluminal endoscopic robot (FASTER). The operator can utilize its external control system to precisely manipulate the grasping forceps, exerting a controlled pulling force in multiple directions away from the gastric wall (► **Fig. 1**) [2].

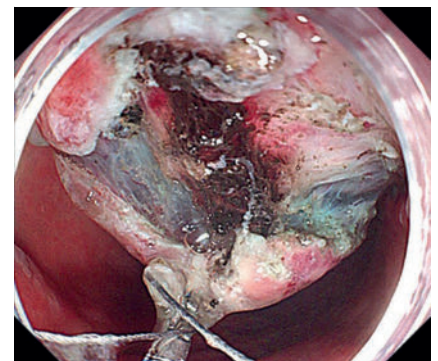
In this case, we completed a successful gastric angle ESD with the assistance of FASTER (► **Video 1**). Firstly, a flat lesion was observed at the gastric angle (► **Fig. 2**). Then, lesion marking, submucosal injection, and circumferential mucosal incision were performed. Next, the robot arm was attached to the tip of the conventional endoscope by a soft hood. The forceps were fixed at the six o'clock position to grasp the lesion edge, providing downward traction. The operation



► **Fig. 1** Forceps grasped the mucosa and provided a downward pulling force.



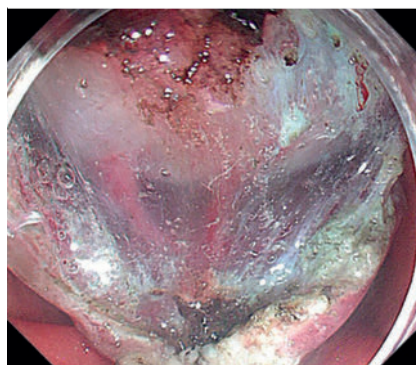
► **Fig. 2** A flat lesion (Ic, 40 mm in diameter) was observed at the gastric angle.



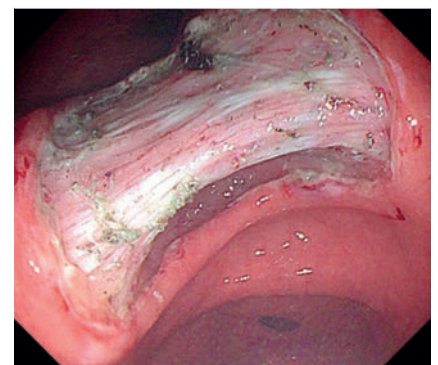
► **Fig. 3** With robot-assisted traction, the submucosa was completely exposed.



► **Video 1** Endoscopic submucosal dissection of early gastric angle cancer by using a simplified robot-assisted device for traction.



► **Fig. 4** The blood vessels were clearly visible.



► **Fig. 5** Condition after the lesion was completely removed.

progressed with an antegrade approach from the angle to the antrum. During the process, the submucosa was completely exposed and blood vessels were clearly visible (► Fig. 3, ► Fig. 4). The position of the forceps could also be changed to achieve multi-position traction. Finally, the lesion was successfully completely removed (► Fig. 5). The total duration of the submucosal dissection was about 33 minutes. There were no complications during the operation. In our experience, we believe that FASTER has three representative advantages: (1) because of its flexibility, traction in both multi-position and multi-angle can be achieved; (2) it enabled an antegrade, tangential approach; and (3) it can effectively cope with difficult gastric angle lesions. It is not difficult to see that FASTER makes ESD easier and safer and provides a new strategy for gastric ESD. More cases and longer follow-up are needed to validate the advantage of this technique.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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