

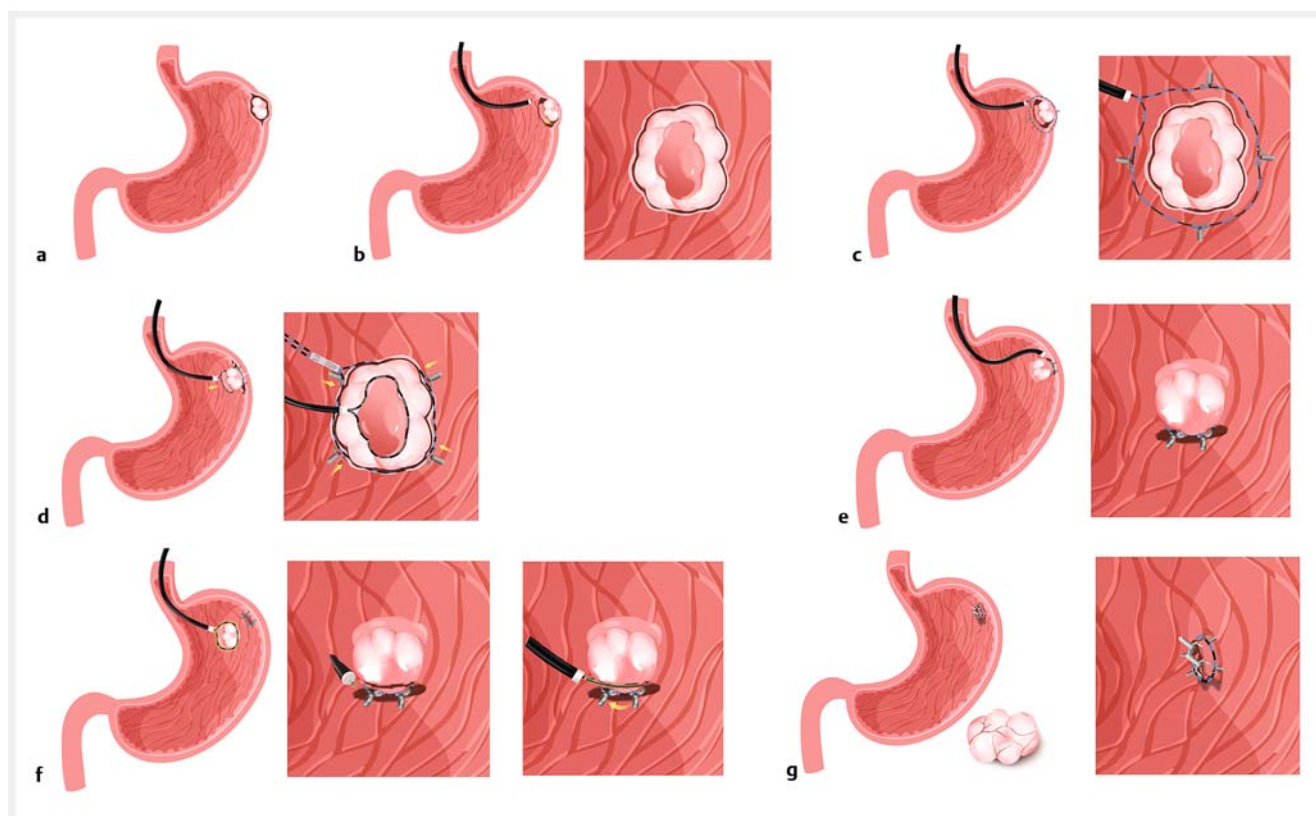
## A loop-assisted inversion technique for easy removal of a gastric stromal tumor in the fundus



► **Fig. 1** Computed tomography image showing a stromal tumor (about 2 × 1 cm) at the gastric fundus.

A 54-year-old woman presented with a stromal tumor (approximately 2 × 1 cm) in the gastric fundus (► **Fig. 1** and ► **Fig. 2a**). After it had been marked and submucosal injection performed under endoscopic guidance, an electro-surgical knife was used to make a circular incision (► **Video 1**). This was challenging because of the difficult approach and the high risk of perforation, with an IT knife being used to make the incision (► **Fig. 2b**). A clip-anchored loop was fixed 1 cm from the incised wound (► **Fig. 2c**). A snare was then used to trap the incised mucosa and lift it, with the loop ring being slowly tightened (► **Fig. 2d**). After

the snare was released, inversion of the tumor was observed (► **Fig. 2e** and ► **Fig. 3**). Next, an electro-surgical knife was used to cut and expose the tumor margins, and a snare was then used to trap the tumor base and perform electro-surgical excision (► **Fig. 2f**). After the excision, the clean inverted wound was sutured using clips (► **Fig. 2g**). Finally, the loop was released. The resected specimen was an intact tumor measuring approximately 2 × 1 cm (► **Fig. 4**). At follow-up 1 month later, a flat wound with a residual loop was observed (► **Fig. 5**). Endoscopic full-thickness resection (EFTR) is regularly used to treat gastric



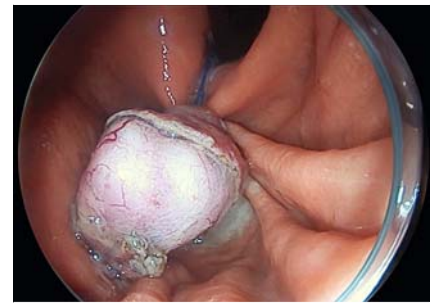
► **Fig. 2** Schematic showing the stages involved in the procedure: **a** a tumor is present in the gastric fundus; **b** circumferential incision is performed after sufficient submucosal injection; **c** a loop is placed encircling the tumor and anchored by clips fixed 1 cm away from the incision; **d** a snare is used to entrap the incised mucosa and pull it towards the cardia, with the loop slowly tightened as the snare is pulled; **e** a protrusion that includes the tumor and normal tissue is seen after tightening of the loop and release of the snare; **f** an electro-surgical knife is used to cut and expose the tumor margins, then a snare placed around the margins of the tumor is used to trap and completely resect it by thermal snare resection; **g** the internal wound surface is sutured, forming the double suture in combination with the loop ligation.



Inverted tumor after releasing the snare



**▶ Video 1** The loop-assisted inversion technique is performed to easily remove a gastric fundal tumor.



**▶ Fig. 3** Endoscopic image showing the inverted tumor.

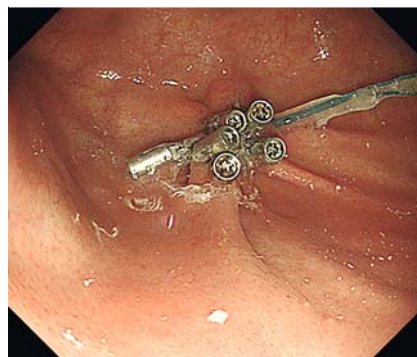
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**▶ Fig. 4** Photograph of the resected intact tumor.



**▶ Fig. 5** Endoscopic appearance at follow-up showing a flat wound closed by clips with the residual loop still in place after 1 month.

stromal tumors, is considered safe, and has a clinical outcome equivalent to surgery [1]. Gastric fundal tumors are associated with a high risk of perforation [2]. If perforation occurs, infection, intraperitoneal implantation metastasis, and postoperative bleeding of the serosal surface are potential concerns [3]. Several methods have been recommended for the management of unavoidable perforations [4]. We used a clip to fix the loop around the tumor and a snare to invert it. Double-suture techniques involving loops and clips are safe, easy, and quick.

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## Competing interests

The authors declare that they have no conflict of interest.

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