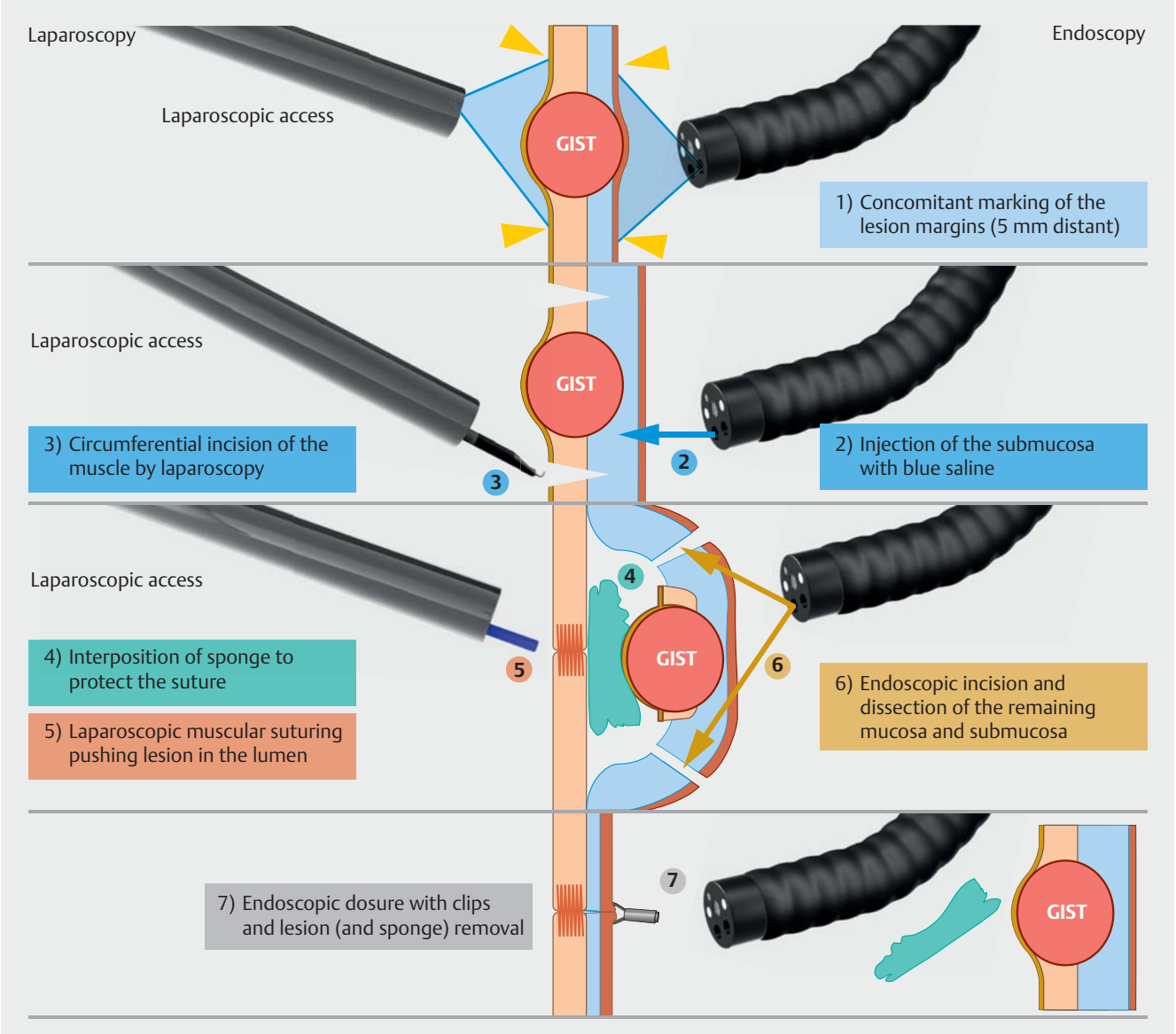
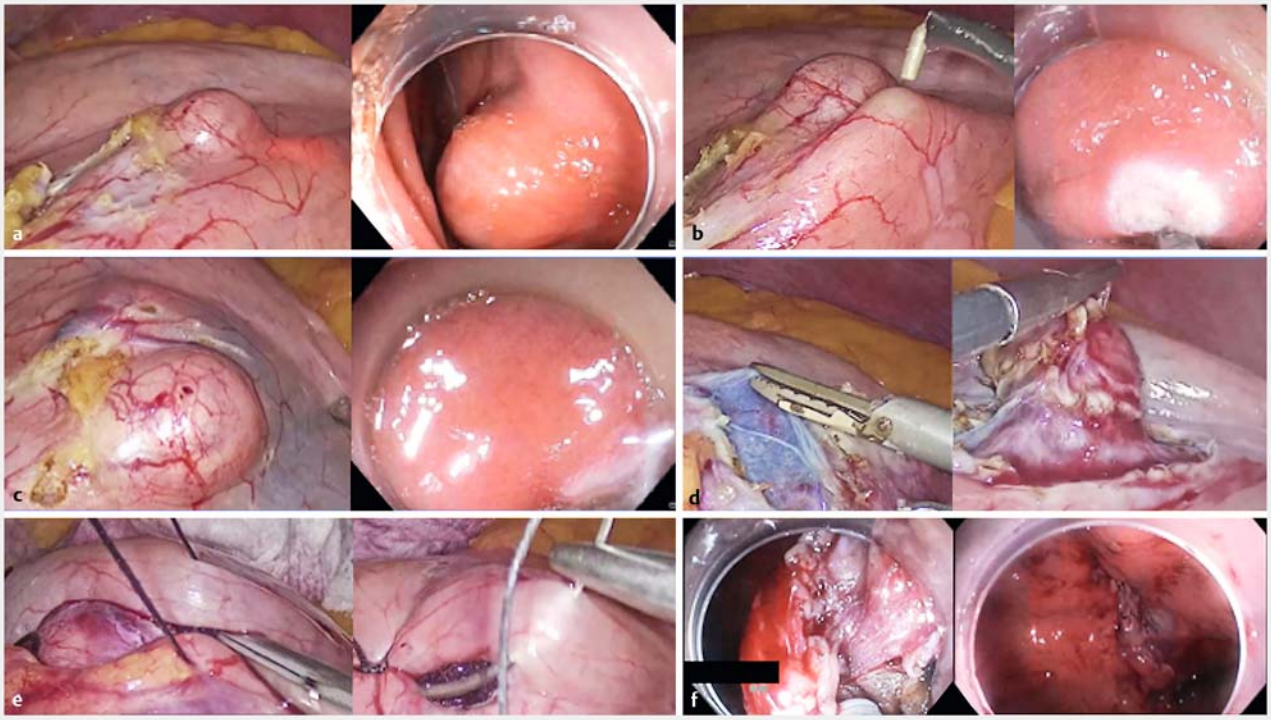
Successful non-exposed endoscopic wall-inversion surgery for gastric stromal tumor and gastric ESD for dysplastic lesion during a single procedure

For gastrointestinal stromal tumors, the risk of lymph node metastasis is considered negligible and partial gastric resection without lymphadenectomy is accepted [1]. However, conventional gastric wall resections are associated with intentional perforation with a risk of bacterial contamination and tumor cell seeding into the peritoneum. To avoid this dissemination, non-exposed endoscopic wall-inversion surgery has been developed [2, 3] but never reproduced outside Japan [4].

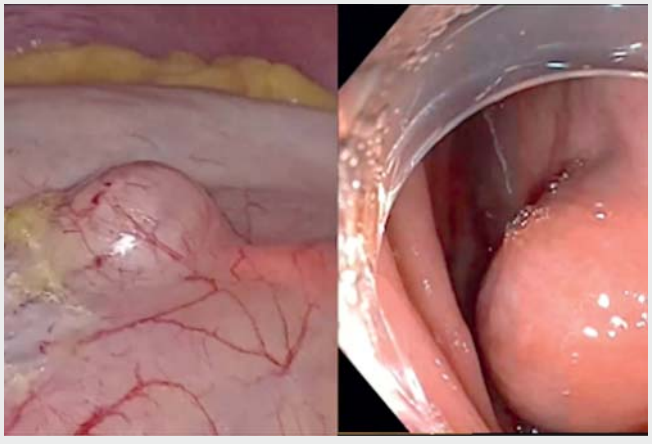
We proposed such a procedure to a 57-year-old man for a 22-mm submucosal tumor of the fundus on the anterior wall close to the lesser curvature. Unfortunately, while surgeons were inserting the laparoscope, a small sessile gastric lesion with a depressed area on the top and an irregular mucosal pattern was detected just below the cardia during the endoscopy. To avoid cancelling the procedure, we performed an en bloc en-



▶ **Fig. 1** Schematic description of the procedure.



▶ **Fig. 2** Description of the procedure. **a** Laparoscopic and endoscopic aspects of the stromal tumor. **b** Concomitant marking on the two sides. **c** Submucosal injection with blue saline solution. **d** Seromuscular incision up to the blue submucosal cushion. **e** Suture on a sponge to push the lesion into the stomach. **f** End of procedure with endoscopic mucosal incision and submucosal dissection and then clip closure.



Video 1 Successful non-exposed endoscopic wall-inversion surgery for gastric stromal tumors and gastric endoscopic submucosal dissection for dysplastic lesion during a single procedure.

doscopic submucosal dissection (ESD) procedure of the lesion (▶ **Video 1**), and then sent the specimen for extemporaneous pathology examination, which confirmed the lack of invasive adenocarcinoma. Non-exposed endoscopic wall-inversion surgery was pursued [2, 3] with circumferential marking (▶ **Fig. 1**, ▶ **Fig. 2**) and submucosal injection with blue saline; surgeons performed the muscular and submucosal incision laparoscopically. Then, two small pieces of sponge were placed against the tumor in order to cover the area with a suture of the gastric wall, pushing the lesion towards the gastric lumen. Once that step was complete without any gastric leakage, the mucosa and remaining submucosa were cut circumferentially by ESD using a DualKnife (Olympus, Tokyo, Japan). The full-thickness specimen was removed endoscopically. Patient resumed eating on day three after the lack of leakage was confirmed (gastric opacification) and was discharged on day five.

To summarize, non-exposed endoscopic wall-inversion surgery is an exciting technique combining endoscopy and laparoscopic surgery to remove gastric tumors without any periprocedural communication of the gastric lumen with the peritoneum, thus reducing the risk of cell seeding. This technique is reproducible outside Japan and seems minimally invasive.

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Competing interests

The authors declare that they have no conflict of interest.

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