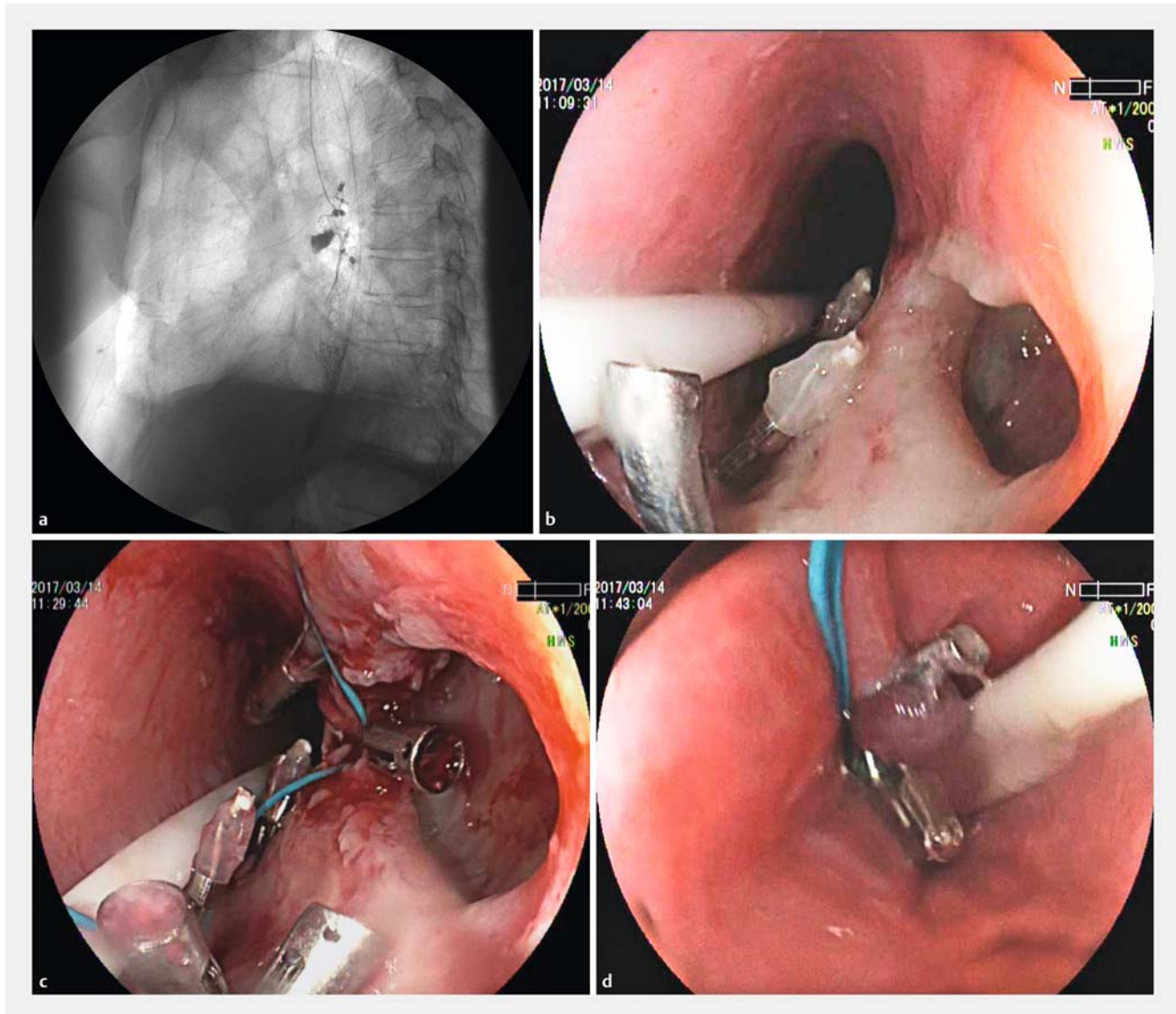


## Successful closure of esophagomediastinal fistula with endoclips and an endoloop after endoscopic submucosal dissection

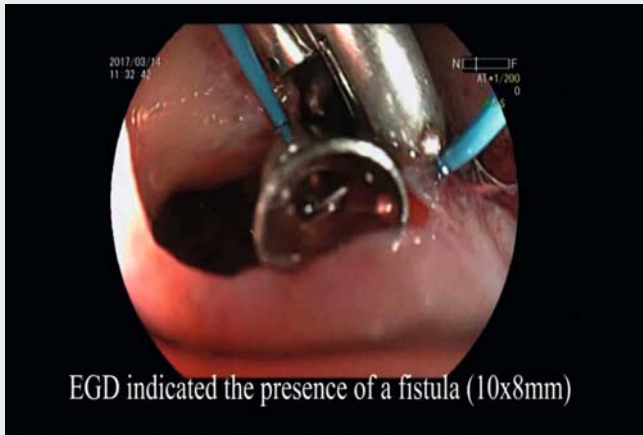


► **Fig. 1** Esophagomediastinal fistula following endoscopic submucosal dissection. **a** Esophagography with a water-soluble contrast agent suggested the presence of an esophagomediastinal fistula. **b** The orifice of the fistula. **c** An open endoloop was placed around the orifice of the fistula and anchored into the margin by endoclips. **d** The endoloop was tightened and the esophagomediastinal fistula was closed.

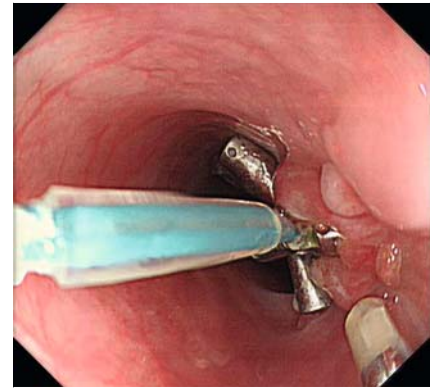
Perforation, bleeding, mediastinal emphysema, and postoperative stricture are the most common complications associated with esophageal endoscopic submucosal dissection (ESD) [1]. However, though rare, esophagobronchial fistula or esophagomediastinal fistula can also

develop after ESD. Conventional treatments of esophageal fistula include surgery, esophageal covered stent implantation, and other endoscopic methods involving the use of endoclips or fibrin glue [2–5].

A 65-year-old man with esophageal high grade intraepithelial neoplasia underwent ESD at our hospital. Following submucosal dissection, multiple-site damage of the muscular layer was found at the mucosal defect. Endoclips (ROCC-D-26-195; Micro-Tech [Nanjing] Co., Ltd.,



▶ **Video 1** Endoscopic treatment for esophagomediastinal fistula with endoclips and an endoloop after endoscopic submucosal dissection.



▶ **Fig. 2** Esophagogastroduodenoscopy revealed complete healing of the fistula, with residual endoclips and endoloop and formation of granulation tissue.

Nanjing, China) were used to close the defective muscularis.

The patient developed cough with sputum and chest pain on the day after ESD. Esophagography using a water-soluble contrast agent suggested the presence of a large esophagomediastinal fistula (24×16 mm) (▶ **Fig. 1 a**). The patient's symptoms were controlled after ambrosia and use of a broad-spectrum antibiotic. A repeat esophagography 4 days later revealed that the fistula had not significantly decreased in size. Esophagogastroduodenoscopy (EGD) indicated the presence of a fistula (10×8 mm) on the oral side of the ESD lesion (▶ **Fig. 1 b**). A 30-mm open endoloop (MAJ-254; Olympus Medical Co., Tokyo, Japan) was placed around the fistula orifice and anchored using five endoclips (▶ **Fig. 1 c**). Subsequently, the endoloop was tightened and then released (▶ **Fig. 1 d**, ▶ **Video 1**). Following this successful closure of the esophagomediastinal fistula, a jejunal tube was placed.

Esophagographic examination 2 days after the endoscopic fistula closure showed no extravasation of contrast. EGD performed 2 months later indicated complete healing of the fistula, with residual endoclips and endoloop and formation of granulation tissue (▶ **Fig. 2**).

To the best of our knowledge, this is the first report of an esophagomediastinal fistula after ESD closed by tightening an endoloop anchored by endoclips. Further studies will be necessary to demonstrate the general applicability of this method to other segments of the gastrointestinal tract.

Endoscopy\_UCTN\_Code\_CPL\_1AH\_2AG

#### Competing interests

None

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DOI <https://doi.org/10.1055/s-0043-124181>  
Published online: 8.2.2018  
*Endoscopy* 2018; 50: E92–E94  
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Stuttgart · New York  
ISSN 0013-726X

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