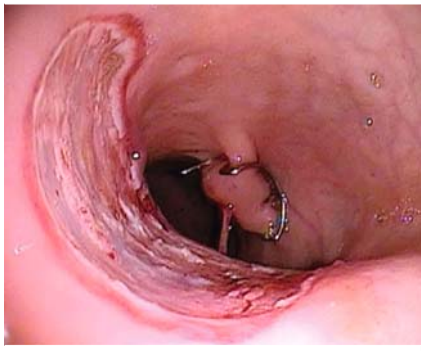
Percutaneous traction via a novel endoscopic trocar facilitates endoscopic submucosal dissection

▶ **Fig. 1** Endoscopic image showing a gastric port in the wall contralateral to the marked lesion.

▶ **Fig. 2** Images during endoscopic submucosal dissection with percutaneous intragastrointestinal trocar (PIT) assistance showing: **a** the use of a forceps through the PIT, which allows traction on the lesion to improve visualization and tissue tension to enhance dissection; **b** improved exposure of the submucosal layer.

▶ **Fig. 3** Endoscopic image showing colonic endoscopic submucosal dissection with percutaneous intragastrointestinal trocar (PIT) assistance.



▶ **Fig. 4** Final appearance following colonic endoscopic submucosal dissection after closure of the colon access site with a cap-mounted clip.

Minimally invasive endoscopic procedures are associated with fewer adverse events and shorter hospital stays compared with surgery [1]. However, some advanced endoscopic procedures, including endoscopic submucosal dissection (ESD), require specialized training and significant experience to achieve competency and are not widely performed in non-specialist centers [2].

Despite the availability of a wide range of accessory devices, endoscopy lacks the dexterity required to achieve triangulation of instruments to perform non-axial tissue manipulation [3]. Because of the limitations of flexible endoscopes, a novel percutaneous intragastrointestinal trocar (PIT) has been designed. This device (Endo-TAGSS LLC, Kansas City, Missouri, USA) is placed using well-understood percutaneous endoscopic gastrostomy (PEG) techniques that have been performed by many physicians worldwide, with low rates of adverse events [4]. While previous studies have used this technique in intragastric procedures, in this video we demonstrate the use of the PIT device in both gastric and colonic ESD [5].

Under endoscopic visualization, an intragastrointestinal port (3.8 mm/11 Fr) was placed in a fashion similar to that of a standard PEG in the contralateral wall of the lesion (▶ **Fig. 1**). The dilator tip was replaced with a trocar head and connected to a laparoscopic insufflator. After the trocar had been placed, a gastroscope and conventional injection needle were used to perform submucosal lift, which was followed by mucosal incision. A grasper was used through the trocar to hold the tissue and provide traction for better exposure and tissue tension during dissection (▶ **Fig. 2** and ▶ **Fig. 3**). In ▶ **Video 1**, we closed the defects using the over-the-scope clip (OTSC) Twin Grasper and cap-mounted OTSCs (Ovesco Endoscopy AG, Tübingen, Germany) (▶ **Fig. 4**), but any approved endoscopic closure device can be used.

This novel endoscopic trocar therefore allows for hybrid percutaneous–endoscopic procedures, improving exposure and tissue manipulation, with the potential to shorten the learning curve and broaden the adoption of challenging procedures, such as ESD.

Video 1 Use of a second instrument through the percutaneous intragastrointestinal trocar (PIT) allows traction on the lesion to improve visualization and tissue tension to enhance dissection.

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Competing interests

C. Thompson is a consultant for Boston Scientific, Endo-TAGSS, Olympus, Apollo Endosurgery, Fractyl, and USGI medical; H. Aihara is a consultant for Fujifilm, Olympus and Boston Scientific. The remaining authors have no competing interests to report.

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