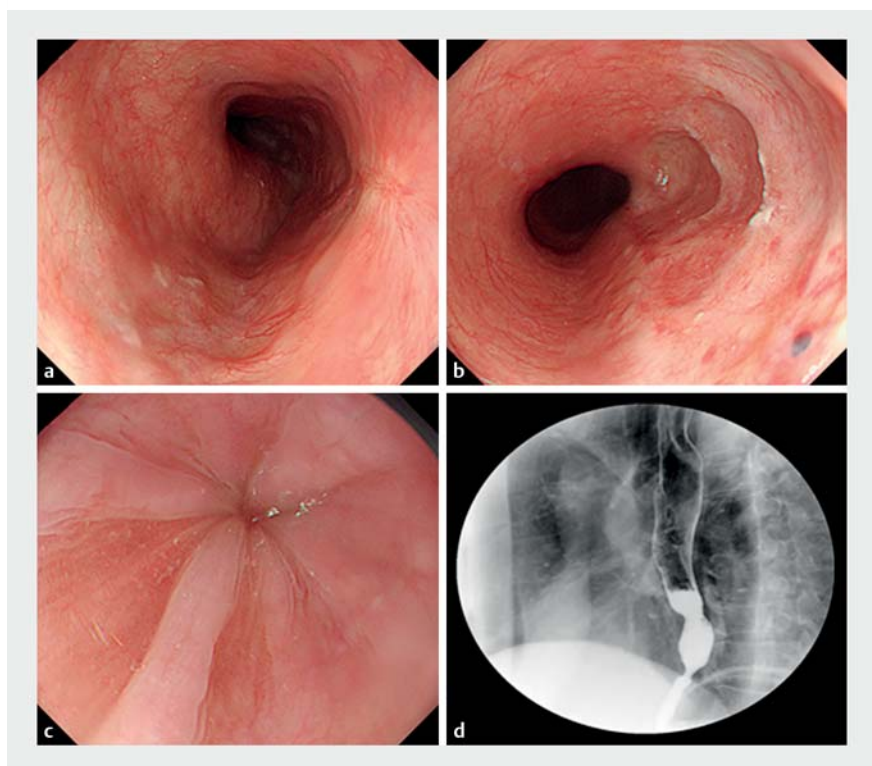
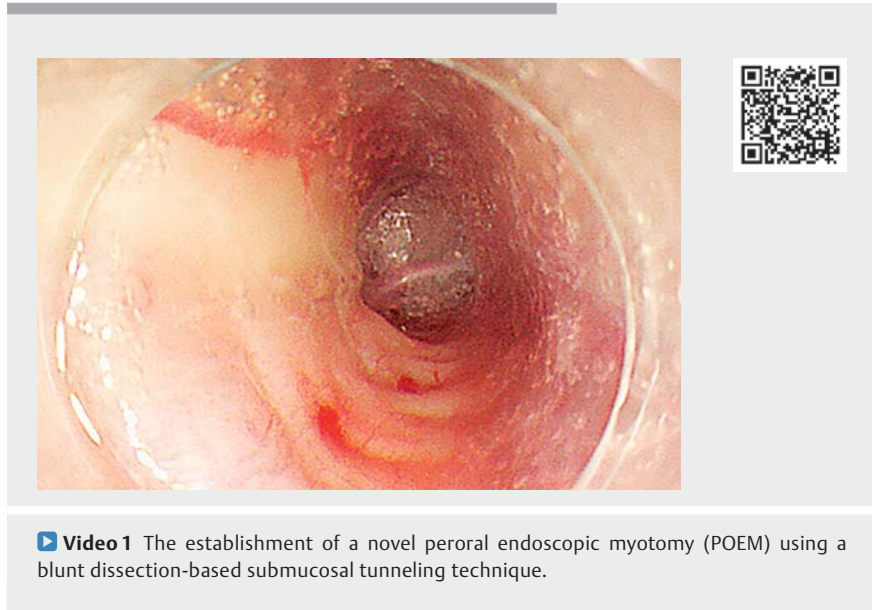


## Technically simplified peroral endoscopic myotomy: blunt dissection making submucosal tunneling fast and safe

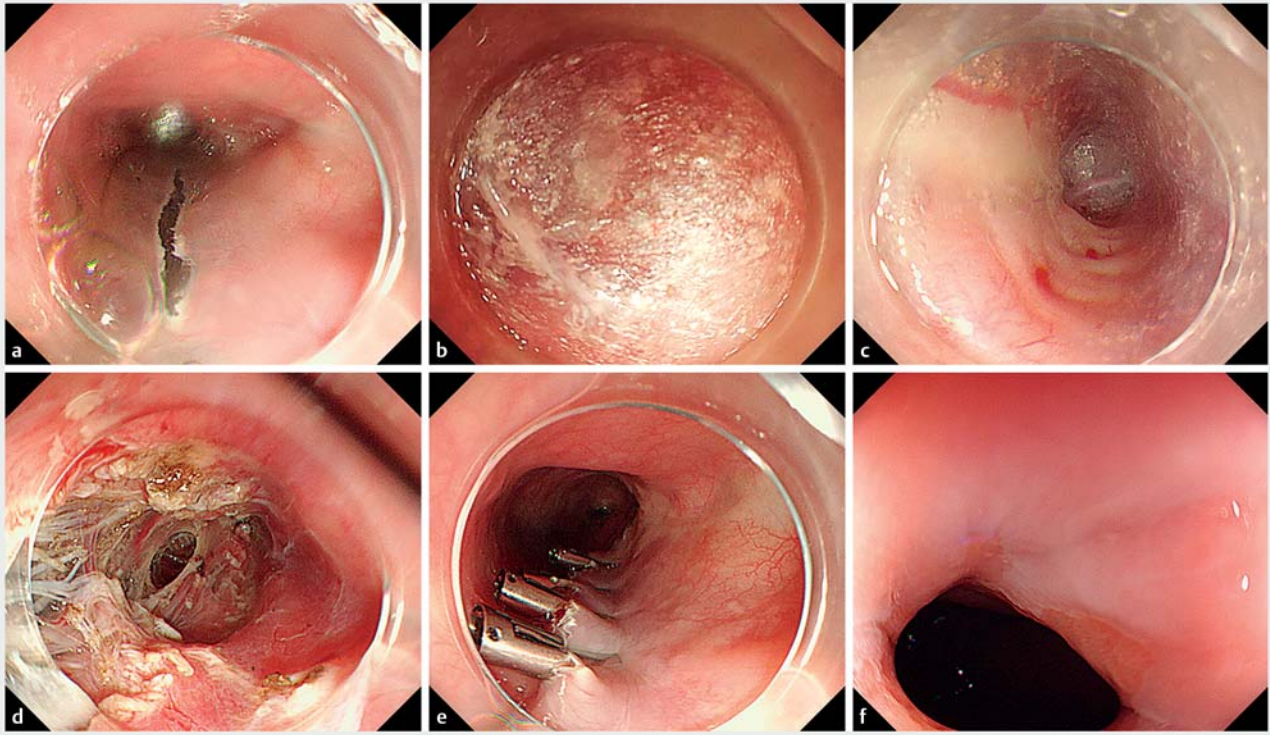
As a primary treatment for patients with achalasia [1], peroral endoscopic myotomy (POEM) is a technically demanding procedure [2]. To perform a high-quality POEM and to prevent complications such as leakages, infections, major bleeding, and gas-related events, the establishment of a submucosal tunnel and the integrity of the mucosal flap are crucial [3, 4]. We present a blunt dissection technique to achieve rapid and safe submucosal tunneling in the aim to build a technically simplified POEM, which we call blunt POEM (▶ **Video 1**).

A 58-year-old woman suffered from solid food dysphagia and regurgitation. The endoscopy presented two surgical scars (▶ **Fig. 1 a, b**) and a contraction ring at the lower esophagus (▶ **Fig. 1 c**). The patient was diagnosed with type II achalasia under barium esophagography (▶ **Fig. 1 d**) and high resolution esophageal manometry. We decided to perform POEM on the patient. Briefly, a mucosal incision was made on the posterior esophageal wall (▶ **Fig. 2 a**). Once the endoscope was maneuvered into the submucosal space, the transparent cap was applied to bluntly dissect the fibers and thus establish a submucosal tunnel (▶ **Fig. 2 b**). The blunt dissection was so efficient that it took only 2 minutes to establish a 10-cm tunnel (▶ **Fig. 2 c**). After the submucosal tunnel was extended 2 cm into the proximal stomach, the selective inner circular myotomy and full-thickness myotomy were conducted (▶ **Fig. 2 d**). Finally, the mucosal entry was closed using endoclips (▶ **Fig. 2 e**). After the procedure, the lower esophageal sphincter (LES) was open and the endoscope smoothly passed the cardia (▶ **Fig. 2 f**).

The simplest strategy to establish a tunnel is to dissect the submucosal fibers without a knife, and the most effective way to prevent complications is to preserve the intact mucosal flap [5]. In the current method of blunt POEM, we devel-



▶ **Fig. 1** The diagnosis of achalasia after endoscopic submucosal dissection of early esophageal cancer. **a** One surgical scar on the right esophageal wall 24 cm away from the incisors. **b** Another esophageal scar 34 cm away from the incisors. **c** Contractile closed cavity was seen at the lower esophagus under endoscopy. **d** A beaklike narrow ring presented at the lower esophagus on barium esophagography.



**► Fig. 2** The establishment of a novel peroral endoscopic myotomy (POEM) using blunt dissection-based submucosal tunneling technique. **a** A 1.5-cm to 2-cm longitudinal mucosal opening was made after a submucosal cushion was created with the methylene blue saline solution. **b** The endoscope with a transparent cap fitted on its tip was drilled into the submucosal layer to create the working tunnel by bluntly dissecting fibers with the transparent cap. **c** A wide submucosal tunnel was established rapidly and safely as care was taken with the orientation of the endoscope. **d** Myotomy was performed from 2 cm below the mucosal opening to the end of the submucosal tunnel. **e** The mucosal opening was closed using endoscopic clips. **f** After the procedure, the cardia was relaxed and the endoscope was passed through it smoothly.

oped blunt dissection to simultaneously create a safe tunnel and preserve the mucosal flap. Compared with traditional POEM, blunt POEM is more easily maneuverable and less time-consuming for the treatment of achalasia.

Endoscopy\_UCTN\_Code\_TTT\_1AO\_2AN

### Competing interests

The authors declare that they have no conflict of interest.

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*Endoscopy* 2022; 54: 724–725

DOI 10.1055/a-1532-1759

ISSN 0013-726X

published online 9.7.2021

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