Pull-back myotomy to prevent mucosal injury during peroral endoscopic myotomy for jackhammer esophagus

Mucosal injury is a notable perioperative complication of peroral endoscopic myotomy (POEM), occurring in 1.6%–25.8% of procedures [1–3]. Esophageal perforation caused by mucosal injury can lead to leakage of contents into the mediastinum, potentially resulting in mediastinitis [4]. Jackhammer esophagus is a hypercontractile esophageal motility disorder diagnosed using high-resolution manometry (HRM), necessitating extended myotomy in POEM [5]. Additionally, heightened caution is warranted when the length of the submucosal tunnel exceeds 13 cm, as it is associated with an elevated risk of mucosal injury [2]. Therefore, the POEM for jackhammer esophagus should be approached cautiously, considering the potential risk of mucosal injury.

Herein, we report on a 74-year-old man who underwent POEM of jackhammer esophagus. Endoscopic examination showed spastic contractions in the esophageal body impeding the passage of the scope. HRM showed hypercontractility of the esophageal body (▶ Fig. 1). We performed the POEM using a Triangle Tip Knife J (Olympus, Tokyo, Japan). Hypercontraction was observed endoscopically during submucosal tunnel creation and myotomy. Initially, we started a conventional myotomy, making an incision from the muscle side to the tunnel side. However, concerns arose regarding mucosal injury due to contact between the knife and the mucosa during hypercontraction (▶ Fig. 2a). Therefore, we converted to an alternative procedure termed “pull-back myotomy”, moving the Triangle Tip Knife J from the tunnel to the muscle layer (▶ Fig. 2b–d, ▶ Video 1). This approach effectively prevented knife contact with the mucosa, even during hypercontraction. Consequently, a 19-cm myotomy was completed without causing mucosal injury.

Four months after POEM, hypercontraction had disappeared, and the patient’s symptoms were improved (▶ Fig. 3).

To the best of knowledge, there are no reports detailing specific myotomy techniques designed to prevent mucosal injury, such as the pull-back myotomy. However, large-scale studies are needed to determine the efficacy of this procedure.

Conflict of Interest

The authors declare that they have no conflict of interest.
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Fig. 2 Endoscopic findings during peroral endoscopic myotomy. a After creating a submucosal tunnel, conventional myotomy was initiated using the Triangle Tip Knife J from the muscle layer side to the submucosal tunnel side (white arrow). b Concerns about mucosal injury arose due to the proximity of the mucosa and muscle during strong contractions. c During the pull-back myotomy, the Triangle Tip Knife J was operated from the submucosal tunnel to the muscle layer (yellow arrow), thereby preventing mucosal injury. d Myotomy was completed without mucosal injury.

Fig. 3 Examinations after peroral endoscopic myotomy. a Endoscopy showed no abnormal contraction of the esophagus. b There were no findings of gastroesophageal reflux disease at the esophagogastric junction. c Endoscopic ultrasonography showed that the thickening of the muscle layer had disappeared in the area where the myotomy was performed (white arrow). d Abnormal contractions also disappeared on high-resolution manometry.