

# Per oral endoscopic myotomy (POEM) for all spastic esophageal disorders?

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Achalasia is a rare esophageal motility disorder defined as impaired relaxation of the esophago-gastric junction (EGJ) and the absence of esophageal peristaltic contractions. High resolution manometry (HRM) is now the gold standard for the diagnosis of achalasia. Pandolfino et al. proposed classifying achalasia into three subtypes based on esophageal contraction patterns on HRM [1]. In the most recent iteration (version 3.0) of the Chicago Classification of esophageal motility disorders on HRM, achalasia is defined as impaired EGJ relaxation and subsequently divided into three subtypes [2]. Type I is characterized by the absence of esophageal contractions and the absence of pressurization, type II by the absence of esophageal contractions and at least 20% of swallows that are associated with pan-esophageal pressurization, and type III (also called spastic) by at least 20% of contractions that are premature (▶ Fig. 1a–c). Different studies demonstrated the clinical relevance of this classification [3–6]. Thus, patients with type II achalasia had the best outcome overall after treatment, whereas patients with type III had the worst.

The response to treatment may also differ according to the performed procedure. Rohof et al. observed that outcome was better in patients with type III achalasia who underwent laparoscopic Heller myotomy (LHM) than in those who underwent pneumatic dilation [5]. One simple explanation would be that pneumatic dilation alleviates only EGJ obstruction, whereas LHM not only alleviates EGJ obstruction but also may treat spastic contractions (which are associated with EGJ obstruction in type III achalasia) by extending the myotomy along the distal esophagus.

The popularity of per oral endoscopic myotomy (POEM) for the treatment of achalasia is rapidly growing. First described in 1980 by Ortega et al. [7], the procedure was developed later by Inoue et al., who used the submucosal flap technique as

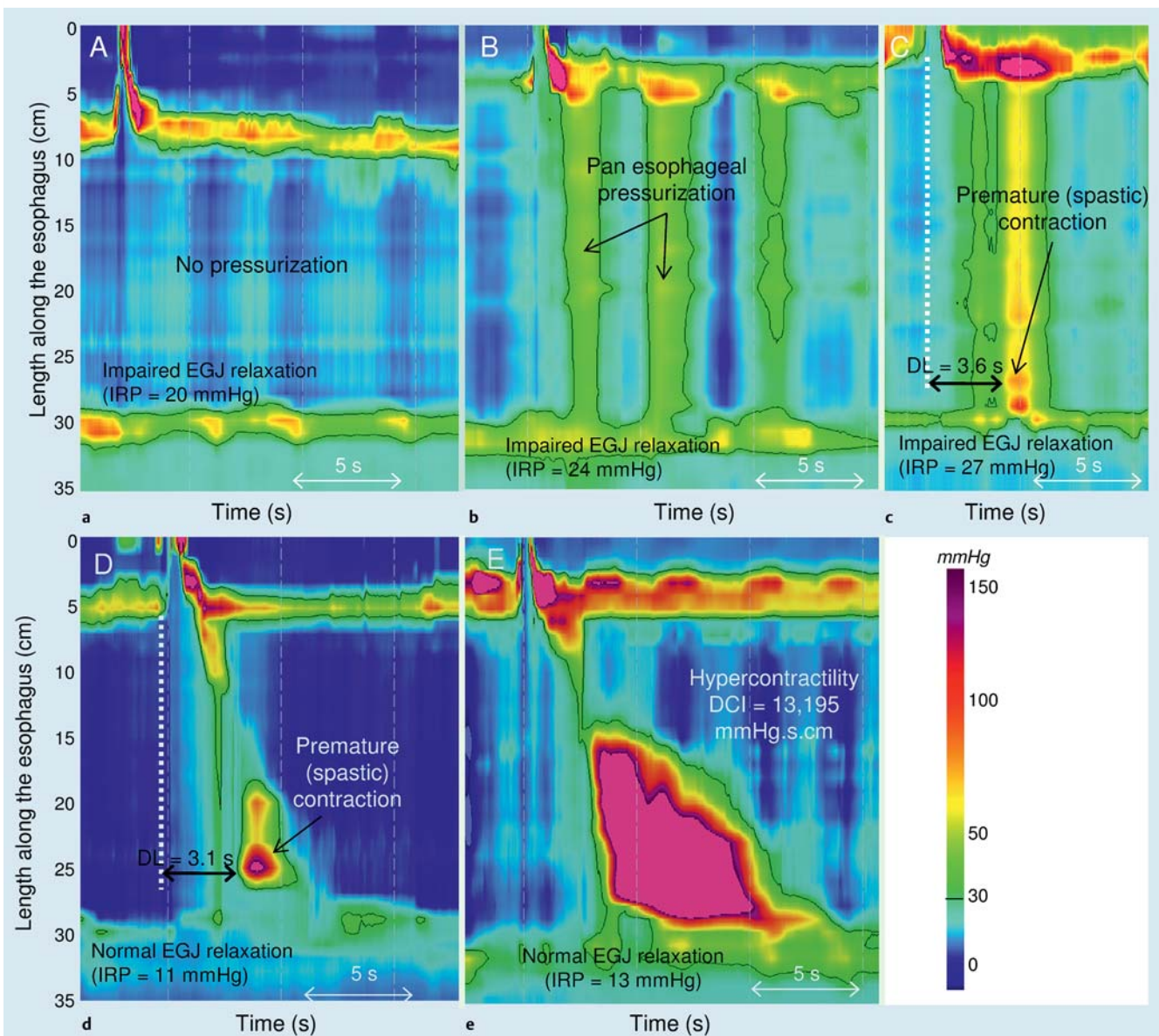
a safe transmural approach [8]. Since 2010, different series have reported the safety and efficacy of the procedure [9–13]. In this issue of *Endoscopy International Open*, Kumbhari et al. have evaluated the efficacy of the POEM procedure in 49 patients with type III achalasia [14]. Patients at eight different centers were retrospectively included, and their results were compared with those of 26 patients who underwent LHM at a single center. A clinical response, defined as an Eckhardt score of 1 or lower, was more frequently observed in the patients treated with POEM than in those treated with LHM (98.0% vs. 80.8%;  $P < 0.01$ ).

As demonstrated by Kumbhari et al., POEM may be an attractive procedure for patients with type III achalasia. The fact that endoscopic myotomy can be started more than 10 cm above the EGJ may explain why it may be more efficient for treating type III achalasia, which is associated with abnormal contractions in the mid and distal esophagus. However, the results of this retrospective study must be interpreted with caution because the endoscopic myotomy technique probably varied from one center to another. Thus, the effect of the exact length of the myotomy, and the effect of a myotomy limited to the internal muscular layer versus that of a full-thickness myotomy, cannot be correctly evaluated based on these results.

When HRM is used, hypercontractile esophageal motility disorders are classified into two categories: distal esophageal spasm (DES), in which at least 20% of contractions are premature (contractions occurring within a phase when esophageal contractile activity is normally inhibited), and jackhammer esophagus, in which at least 20% of contractions occur with extreme vigor (contractions with a distal contractile integral  $> 8000$  mmHg.s.cm) [2] (▶ Fig. 1d,e). These disorders, never encountered in normal individuals, are responsible for esophageal symptoms (mainly dysphagia and chest pain) [15, 16].

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**Fig. 1** Esophageal motility disorders on high resolution manometry. Achalasia is characterized by impaired esophagogastric junction (EGJ) relaxation (defined as an integrated relaxation pressure [IRP] > 15 mmHg). Esophageal pressurization is absent in type I achalasia (a), at least 20% of swallows are associated with pan-esophageal pressurization in type II (b), and at least 20% of contractions are premature (that are contractions with a distal latency [DL] of <4.5 seconds) in type III (c). Distal esophageal spasm (d) is defined as normal EGJ relaxation and at least 20% of contractions that are premature, and jackhammer esophagus is defined as at least 20% of swallows that are hypercontractile (that are contractions with a distal contractile integral [DCI] > 8000 mmHg.s.cm) (e).

Treating these disorders is challenging: pharmacologic treatment (nitrates, calcium channel blockers) is disappointing, botulinum toxin injection has short-term efficacy, and surgical extended myotomy may require a thoracoscopic approach [17]. POEM is a promising therapeutic approach because it is possible to start the submucosal tunnel and subsequent myotomy in the proximal esophagus, allowing a significant modification of muscular activity in the esophageal body with a minimally invasive approach. In this study, Kumbhari et al. clearly showed that the complication rate was not higher and the procedure duration was no longer with POEM than with LHM, despite a longer myotomy [14]. Case reports and small series have reported the efficacy of POEM for hypercontractile esophageal motility disorders [18–23]. However, a recent series suggested that the outcome after the POEM procedure may be better in patients with achalasia than in those with DES or jackhammer esophagus [24]. Complete

relief of dysphagia was observed in 98% of patients who had achalasia versus 71% of patients with esophageal motility disorders that were not achalasia. Future controlled studies are required to evaluate the place of POEM in patients with spastic esophageal disorders and to determine the optimal length of myotomy in treating these disorders.

**Competing interests:** S. R. and F. M. have served as consultants for Given Imaging; M. P. has no competing interest to declare.

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