

# ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

Section Editor: Prateek Sharma, MD

## Reflux After Peroral Endoscopic Myotomy



Mouen A. Khashab, MD  
 Director of Therapeutic Endoscopy  
 Associate Professor of Medicine  
 Division of Gastroenterology and Hepatology  
 Johns Hopkins Hospital  
 Baltimore, Maryland

### G&H What are the main indications for peroral endoscopic myotomy?

**MK** Peroral endoscopic myotomy (POEM) is typically performed for patients with achalasia, and the procedure is effective for types I, II, and III. POEM has also been shown to be effective for patients with spastic esophageal disorders, such as diffuse esophageal spasm and jackhammer esophagus. Lastly, POEM is used to treat patients with esophagogastric junction outflow obstruction.

### G&H How prevalent is post-POEM reflux?

**MK** The rate of reflux following POEM depends on how post-POEM reflux is defined. Gastroesophageal reflux can be defined by abnormal esophageal acid exposure, which is diagnosed using formal pH testing. Studies have shown that the average rate of abnormal esophageal acid exposure is between 40% and 50%. Gastroesophageal reflux can also be defined according to the rate of esophagitis found during upper endoscopy, which varies between 30% and 40%. Lastly, reflux can be defined by gastroesophageal reflux symptoms. Approximately 40% of patients with objective evidence of reflux have symptoms. In other words, approximately 60% of patients with abnormal esophageal acid exposure or evidence of esophagitis during upper endoscopy have no symptoms.

### G&H How does the rate of reflux differ between POEM and other treatment modalities?

**MK** POEM has been compared to pneumatic dilation and laparoscopic Heller myotomy in major randomized trials. In an article published in *JAMA* in 2019 by Dr Ponds and colleagues, POEM was shown to be significantly more efficacious than pneumatic dilation (clinical success, 92% vs 54%). However, the rate of esophagitis after POEM was 41%, which was significantly higher than the rate of esophagitis after pneumatic dilation (7%). The majority of patients who had esophagitis in the POEM group had Grades A and B esophagitis according to the Los Angeles Classification, and the minority were Grade C. All of the patients who developed esophagitis in the pneumatic dilation group had Grade A esophagitis.

In a randomized trial that was recently published in *The New England Journal of Medicine*, Dr Werner and colleagues compared the rate of reflux between POEM and laparoscopic Heller myotomy. Both techniques were found to be equally effective. Although the rate of esophagitis was significantly higher in the POEM group at 3 months, the increased risk of gastroesophageal reflux disease (GERD) after POEM diminished over time as compared to the laparoscopic Heller myotomy group. Importantly, it also appeared that the risk of significant

esophagitis (Grades C and D) was similar between both groups.

### **G&H** How is post-POEM GERD diagnosed?

**MK** To determine whether a patient has GERD, clinicians should first ask the patient about gastroesophageal

Some studies have suggested that a short gastric myotomy may be associated with decreased incidence of postprocedural reflux, but these are still preliminary data ...

reflux symptoms, such as heartburn. Clinicians can also perform pH testing via placement of either a Bravo probe or a pH-impedance catheter. Lastly, GERD can be diagnosed by upper endoscopy, where there might be evidence of esophagitis; however, not all patients who have gastroesophageal reflux will have evidence of esophagitis.

### **G&H** Are there any patient-related factors that might predict reflux following POEM?

**MK** Multiple studies have investigated whether patient-related factors may predict reflux post-POEM, including a recent study from India by Dr Nabi and colleagues. The impression of this study was that GERD after POEM is unpredictable. Furthermore, when the authors looked at the type of achalasia, direction of myotomy, manometry variables, and patient characteristics, they found no positive predictors for occurrence of GERD after POEM.

### **G&H** What procedure-related variables are associated with post-POEM reflux?

**MK** Both the direction and depth of myotomy have been thought to play a role. My colleagues and I recently published a randomized trial in *Gastrointestinal Endoscopy* comparing anterior vs posterior myotomy. The rate of abnormal acid exposure was 49% in the anterior group and 42% in the posterior group, and the difference was not significant. Thus, the direction of myotomy does

not appear to affect the rate of reflux postprocedure. A randomized trial evaluated the depth of myotomy, comparing selective (inner circular muscle fibers) vs full-thickness myotomy. No difference was found in the risk of postprocedural reflux. Some studies have suggested that a short gastric myotomy may be associated with decreased incidence of postprocedural reflux, but these are still preliminary data, and more studies are needed to confirm if a short gastric myotomy can protect against reflux.

### **G&H** What steps should be taken following POEM to prevent reflux-related adverse events, either short or long term?

**MK** There are multisociety recommendations on how to follow patients after POEM, specifically for the diagnosis and management of possible postprocedural reflux. These guidelines have suggested 3 methods for the follow-up and management of these patients: objective, periodic testing for esophageal acid exposure; long-term and possibly lifelong proton pump inhibitor use; and surveillance for long-term consequences of GERD via periodic upper endoscopy.

### **G&H** If reflux cannot be prevented, how should GERD as a result of POEM be treated?

**MK** Patients who have reflux symptoms or have esophagitis on upper endoscopy are typically managed with a proton pump inhibitor. Dr Nabi and colleagues found that 80% of patients who are placed on a proton pump inhibitor have resolution of both reflux symptoms and esophagitis. Therefore, the majority of patients are responsive to this therapy. A minority of patients may continue to have symptoms or severe esophagitis despite proton pump inhibitor therapy, and these patients can be managed with either endoscopic or surgical partial fundoplication.

### **G&H** How should patients be followed up?

**MK** At my center, we follow our patients very closely. After undergoing the POEM procedure, patients are seen on a yearly basis for assessment of their symptoms of dysphagia and GERD. As previously mentioned, patients with any evidence of reflux (objective or subjective) should be managed with proton pump inhibitors, and the few patients who are refractory to proton pump inhibitors should be considered for escalation of treatment to endoscopic or surgical partial fundoplication.

### **G&H** What are the priorities of research in this area?

**MK** One of the priorities of research is identifying ways to modify the POEM technique in order to reduce the risk of postprocedural reflux. A technical method that can be studied is a short gastric myotomy vs a standard or long gastric myotomy. Another method that needs further investigation is the use of the 2 penetrating vessels during posterior POEM and determining whether using these landmarks has an effect on postprocedural reflux. There are some preliminary data showing that the 2 penetrating vessels serve as landmarks for the distal end of the myotomy and can offer a method to avoid cutting the oblique muscle fibers. Use of this method should be prospectively studied in terms of protection against postprocedural reflux. Another priority of research is studying methods of treating postprocedural reflux when it occurs. Data are emerging on the use of endoscopic fundoplication during POEM for the prevention of postprocedural reflux. This is a novel but challenging technique that uses the natural orifice transluminal endoscopic surgery approach for the performance of fundoplication at the end of POEM. There is also research on the use of transoral incisionless fundoplication either concomitantly with POEM for the prevention of postprocedural reflux or following the procedure for the selective treatment of patients with

reflux symptoms or esophagitis refractory to proton pump inhibitors.

### Disclosures

*Dr Khashab serves as a consultant for Boston Scientific, Olympus, and Medtronic.*

### Suggested Reading

Khashab MA, Sanaei O, Rivory J, et al. Peroral endoscopic myotomy: anterior versus posterior approach: a randomized single-blinded clinical trial. *Gastrointest Endosc.* 2020;91(2):288-297.e7.

Mota RCL, de Moura EGH, de Moura DTH, et al. Risk factors for gastroesophageal reflux after POEM for achalasia: a systematic review and meta-analysis [published online March 23, 2020]. *Surg Endosc.* doi:10.1007/s00464-020-07412-y.

Nabi Z, Ramchandani M, Kotla R, et al. Gastroesophageal reflux disease after peroral endoscopic myotomy is unpredictable, but responsive to proton pump inhibitor therapy: a large, single-center study [published online March 24, 2020]. *Endoscopy.* doi:10.1055/a-1133-4354.

Ponds FA, Fockens P, Lei A, et al. Effect of peroral endoscopic myotomy vs pneumatic dilation on symptom severity and treatment outcomes among treatment-naive patients with achalasia: a randomized clinical trial. *JAMA.* 2019;322(2):134-144.

Repici A, Fuccio L, Maselli R, et al. GERD after per-oral endoscopic myotomy as compared with Heller's myotomy with fundoplication: a systematic review with meta-analysis. *Gastrointest Endosc.* 2018;87(4):934-943.e18.

Werner YB, Hakanson B, Martinek J, et al. Endoscopic or surgical myotomy in patients with idiopathic achalasia. *N Engl J Med.* 2019;381(23):2219-2229.