

Thoughts on starting a peroral endoscopic myotomy program

I was privileged enough to have trained at an institution where natural orifice transluminal endoscopic surgery was developed. During my time at Johns Hopkins Hospital, I was privy to see the training behind and the initiation of a peroral endoscopic myotomy (POEM) program. In this month's Fellows' Corner, Dr Mouen Khashab gives us his thoughts on the importance and the necessary steps for initiating a POEM program.

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There are a variety of therapies for achalasia, including nitrates, pneumatic dilation, botulinum toxin injection, and Heller myotomy. Although the surgical approach has the most long-lasting outcome, there is a considerable risk of gastroesophageal reflux, and most surgeons perform a concomitant antireflux procedure to diminish this problem. Recent advances in natural orifice transluminal endoscopic surgery (NOTES)¹ and the improvement of devices for endoscopic submucosal dissection have culminated in endoluminal approaches to treating achalasia. An innovative endoscopic procedure, termed peroral endoscopic myotomy (POEM), was developed to reduce lower esophageal sphincter pressure in patients with achalasia. POEM was first described by Pasricha et al² in 2007. Inoue et al³ translated this procedure into clinical care. Initial clinical data from Asia, Europe, and the United States have demonstrated the effectiveness and safety of this procedure when performed by experienced operators. We recently started a POEM program at Johns Hopkins Hospital, and, in this commentary, I present my thoughts on the means and importance of initiating such a program.

WHY START A POEM PROGRAM?

The primary reason for starting POEM is to establish a comprehensive motility program. Large motility programs offer various medical, endoscopic, and surgical treatment modalities for achalasia and other spastic esophageal motility disorders. POEM is offered as an endoscopic therapeutic alternative to Heller myotomy. POEM extends treatment options presented to such patients. In addition, it allows treatment of certain conditions (eg, diffuse esophageal spasm) not amenable to surgical therapy via a laparoscopic approach

Key points

- Initial clinical data on POEM have demonstrated the effectiveness and safety of this procedure when performed by experienced operators.
- A stepwise approach to performing POEM is necessary to ensure safety and optimal outcome.
- A swine animal model seems to be optimal for training in POEM.
- Approaching the patient via a multidisciplinary approach and working within an experienced and cohesive endoscopy team is advisable.

because only the distal 5 cm of the esophagus can be reached via a transperitoneal approach. As for the endoscopist performing POEM, it gives him or her the opportunity to learn a new procedure and indulge in the exciting era of submucosal endoscopy. This "third space" is new to endoscopists and opens the opportunities for performing novel diagnostic and therapeutic research endeavors.^{4,5}

TRAINING

POEM encompasses principles of NOTES and interventional endoscopy. It is a demanding procedure that is potentially associated with serious complications. POEM is currently performed only in specialized centers by either interventional endoscopists or surgeons who are skilled in endoscopy. The initial promising results and the increasing positive international experience call for standardized training recommendations. Initially, the endoscopist should observe POEM performed by an experienced operator. In addition, familiarization with all equipment needed for the procedure is paramount (eg, electrosurgical generator settings, endoscopic submucosal dissection knives, clips). The endoscopist should then rigorously perform POEM in an animal model. Training on a nonsurvival model or on an explanted esophagus is initially advised until the procedure can consistently be performed without serious complica-

tions.⁶ Subsequently, survival experiments can be carried out. The pig is likely the most appropriate animal model for training in POEM because its anatomy is similar to that of humans. In addition, the swine esophagus is long and, thus, is a good model for practicing long submucosal tunneling and myotomy. The disadvantages of the pig model include the soft and less-vascular submucosal space compared with humans, which renders dissection in swine easier and with less bleeding risk, respectively. Submucosal dissection in humans is technically more demanding and time-consuming. Also, bleeding is not uncommon during POEM in humans.

THE POEM TEAM

Patients who are potential POEM candidates are best managed in multidisciplinary fashion. Our team includes an endoscopist, motility gastroenterologists, and laparoscopic surgeons experienced in the Heller myotomy. POEM is performed when there is consensus that it is the optimal approach in a specific patient. POEM procedures are performed in the endoscopy unit at our hospital. Others prefer performing POEM in the operating room. The operator should preferably perform the procedure in a familiar environment with control of the settings and equipment. Procedures should only be performed in hospitals with available surgical (laparoscopic and thoracic) expertise in managing potential complications (eg, esophageal perforation, massive bleeding, mediastinitis, pneumothorax).

A cohesive endoscopy team that is knowledgeable about this novel procedure, including the steps and techniques involved, and potential complications is paramount for successful integration of POEM into gastroenterology programs and successful procedural outcomes. Our dedicated procedure team includes 1 endoscopist, 2 interventional endoscopy nurses, 1 technician, 1 certified registered nurse anesthetist, and 1 anesthetist. It is crucial that the team practices together before commencing procedures in humans. A preprocedural checklist is advisable to make sure all potentially needed equipment is available.

COMMENCING POEM PROCEDURES

It is recommended that all POEM procedures be performed as part of institutional review board–approved protocols. A standard preprocedural workup should include barium esophagram, esophageal motility (high-resolution study when available), and upper endoscopy with biopsies to exclude eosinophilic esophagitis. Initial patients should be those with classic achalasia who do not require a long myotomy (ie, chest pain is not a main symptom). Patients with prior esophagogastric surgeries, prior failed POEM, and previous botulinum toxin injection should be initially excluded because of increased procedural complexity in such patients. Patients with major comorbidities should also be initially excluded. Postprocedural care includes in-

hospital observation, intravenous hydration, administration of intravenous antibiotics, symptomatic treatment for pain and nausea, monitoring for complications, and obtaining water-soluble esophagram the next day before initiation of oral feeding with liquids.

CONCLUSION

POEM is a minimally invasive endoscopic treatment for achalasia with impressive short-term results. However, further larger long-term studies are needed. POEM should be initially restricted to tertiary centers with expertise in motility and a referral base that ensures adequate patient load. A stepwise approach to performing POEM is necessary to ensure safety and optimal outcome. A swine animal model seems to be optimal for training in POEM. Approaching the patient via a multidisciplinary approach and working within an experienced and cohesive endoscopy team is advisable. Procedures need to be performed as part of institutional review board–approved protocols with safety monitoring committees. Standardized periprocedural care should be followed, including a preprocedural workup, as mentioned above, in addition to pre- and postprocedural motility studies, pre- and post-procedural Eckhardt score, and quality of life measurements. These data can be used for transparency, quality measures, and future research.

DISCLOSURE

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Abbreviations: NOTES, natural orifice transluminal endoscopic surgery; POEM, peroral endoscopic myotomy.

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