

PATIENT EDUCATION

Peroral endoscopic myotomy for esophageal motility disorders

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Peroral endoscopic myotomy (POEM) is a procedure that treats swallowing disorders. The procedure is done endoscopically without the need for surgery (Video 1, available online at www.videogie.org).

INDICATIONS

POEM is a treatment option for patients who have swallowing issues such as symptomatic type I, II, or III achalasia, diffuse esophageal spasms, or hypercontractile esophagus, which is sometimes referred to as jackhammer esophagus or nutcracker esophagus.¹

CONTRAINDICATIONS

Patients with severe erosive esophagitis, significant coagulation (bleeding) disorders, liver cirrhosis with portal hypertension, or prior medical treatments that may have affected the strength of the esophageal mucosa or caused submucosal fibrosis may not be suitable candidates for POEM. Some of these treatments include radiation, endoscopic mucosal resection, and radiofrequency ablation. However, previous treatments for achalasia are not a reason to not have this procedure to POEM.

PATIENT PREPARATION

Seventy-two hours before the procedure, patients begin following a clear liquid diet (Table 1). This means that patients cannot eat any food that they need to chew or bite. While on a clear liquid diet, patients can eat clear broth,

TABLE 1. Recommended foods for clear liquid diet

Food group	Recommended food
Fruits	Clear fruit juices without pulp
Other	Gelatin
	Clear broths
Beverages	Water, ice
	Soft drinks
	Coffee or tea without milk

gelatin, fruit juice without pulp, coffee or tea without milk, and sports drinks. They are instructed not to eat anything starting at midnight (12 AM) on the day of the procedure except for a few sips of water to take any medications.

Before the procedure, patients are asked to ensure a responsible care partner can take them home. Patients are advised they might feel drowsy from the anesthesia.

PROCEDURE

First, the patient is given medicine to prevent them from feeling pain or discomfort during the procedure using anesthesia. Once the patient is asleep, the doctor will pass an endoscope, a flexible tube with a camera, from the patient's mouth to the esophagus (Fig. 1). Once the endoscope is in the proper location, a tool is inserted through the endoscope to make a small mark in the lining of the esophagus. After the initial mark, fluid is injected into the lining of the esophagus to ensure the procedure is done safely and nearby structures are not damaged. A cut is then made along the section of tissue that was elevated with the fluid injection. The endoscope is then passed through the incision, into the tissue layer underneath the surface of the esophagus. The submucosa, or the tissue between the surface of the esophagus and the muscle layer, is separated while the endoscope is advanced just past the lower esophageal sphincter (Fig. 2). The lower esophageal sphincter is a ring of muscle that opens and closes like a door between the esophagus and stomach (Fig. 3). Next, the myotomy, or cutting of the muscle fibers, is completed. A different cutting tool is inserted through the endoscope, and the muscle tissue is cut fiber by fiber to loosen the muscles in the lower esophagus, lower esophageal sphincter, and upper part of the stomach. After the initial myotomy, the endoscope is

Abbreviation: POEM, Peroral endoscopic myotomy.

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Figure 1. Endoscope inside of patient's esophagus.

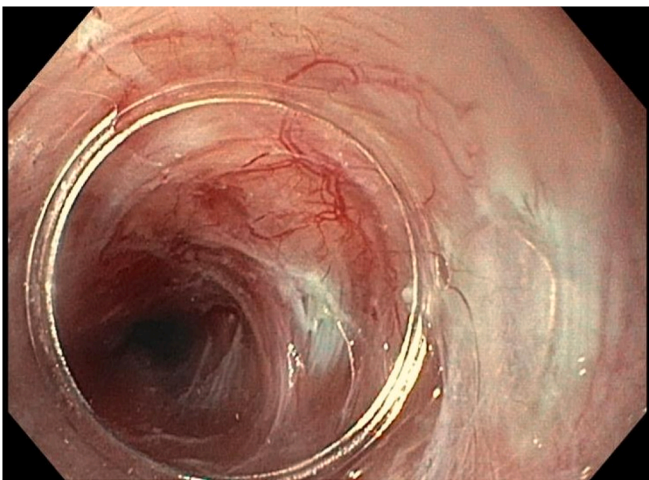


Figure 2. Submucosal tunnel.

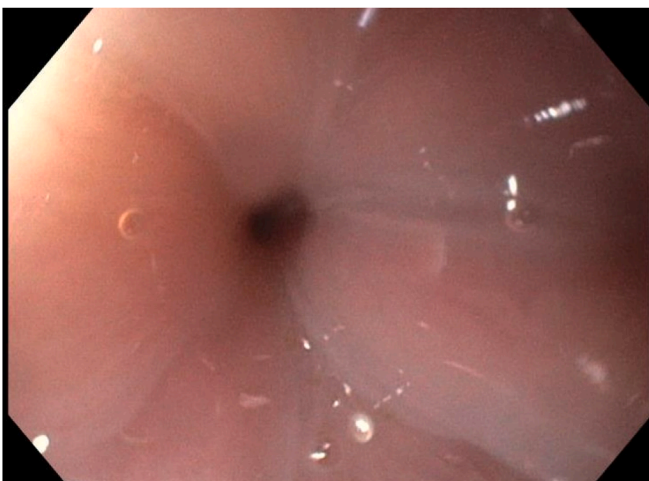


Figure 3. Lower esophageal sphincter with narrow opening before peroral endoscopic myotomy.

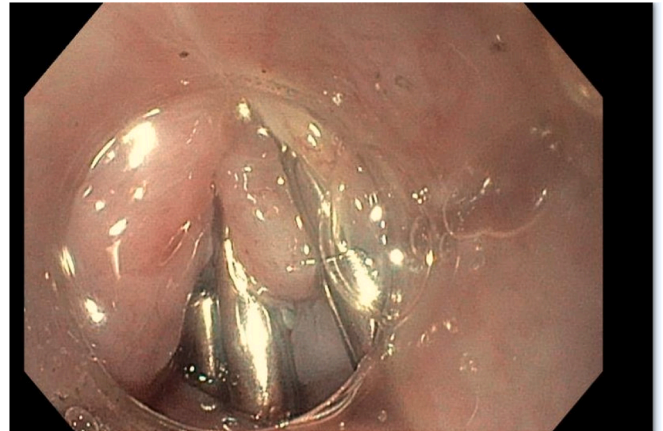


Figure 4. Esophagus after clips were used to close the incision.

removed and a catheter is inserted into the esophagus and through the lower esophageal sphincter. The catheter has specialized sensors that monitor the stiffness of the esophagus by filling a cylinder-shaped balloon with fluid.^{2,3} If the distensibility index, or measure of the stiffness of the esophagus, is still too high, this means that not enough muscle fibers have been cut. The catheter is removed, and the endoscope is reinserted. The doctor then cuts additional muscle fibers along the same length that was previously done to make sure enough muscle is cut to relieve the patient's symptoms. The esophagus has 2 types of muscle fibers: circular muscle fibers that run horizontally and longitudinal muscle fibers that run vertically. Notice how the doctor cuts only the circular fibers but leaves the longitudinal fibers in place. Once the cutting is complete, the endoscope is removed. The catheter is then reinserted to check the distensibility index and maximum diameter of the lower esophageal sphincter. If the distensibility index is within the goal range, the catheter is removed. This illustrates the effect of the POEM to relax the lower esophageal sphincter. The endoscope is reinserted into the esophagus and small clips are used to close the incision made at the beginning of the procedure (Fig. 4). The clips will fall off after the tissue has healed and are easily passed through the gastrointestinal tract. Once the incision is successfully closed, the endoscope is removed, and the procedure is now complete. It is important to note that there may be some variation in procedural technique from doctor to doctor. For example, not all doctors use the specialized catheter or switch cutting tools during the procedure.⁴

ADVERSE EVENTS

Overall, POEM is safe and well tolerated by patients. Adverse events include bleeding, gastroesophageal reflux, and a tear in the lining of the esophagus or stomach.⁴

TABLE 2. Recommended foods for full liquid diet

Food group	Recommended food
Grains	Thin hot cereal, such as cream of wheat
Dairy	Milkshakes
	Pudding, custard
	Ice cream, sherbet, sorbet
	Milk or milk substitutes
	Yogurt without nuts, seeds, or fruit
Fruits	Clear fruit juices without pulp
Vegetables	Thin, pureed vegetable soups
	Vegetable juice without pulp
Other	Gravy
	Syrup
	Gelatin
	Chicken, beef, or vegetable broths
Beverages	Water, ice
	Soft drinks
	Coffee, tea
	Nutritional shakes

POSTPROCEDURE CARE

Most patients can potentially go home the day of the procedure, but there is a chance some patients may need to stay overnight for monitoring.⁵ After the procedure, patients should stay on a full liquid diet for 1 day (Table 2). Patients can then move to a soft diet on the second day (Table 3). After the fourth day, patients may begin advancing their diet as tolerated to a regular diet.

Patients are advised to talk to their doctor about when to restart any medications they paused for the procedure. This includes blood thinners and diabetes medications.

It is normal to have chest tightness or soreness after the procedure. This usually gets better within a few days. Pain after the procedure should be managed with liquid Tylenol (Kenvue Brands LLC, Summit, NJ, USA). Additional medications may also be prescribed depending on your pain level.

After POEM, patients may experience increased acid reflux symptoms. To help with these symptoms, patients should take an acid-inhibiting medication. The medication should be taken twice daily, 30 minutes before meals for 8 weeks. Then the patients should talk to their gastroenterologist if they are still having symptoms.

It is possible to follow up with a repeat EGD, high-resolution manometry, and/or timed barium esophagram around 6 months after the procedure. The patient's health care team will let them know when to follow up next.

TABLE 3. Recommended foods for soft diet

Food group	Recommended food
Grains	White bread
	Muffins, pancakes
	Jelly, butter
	Pasta, noodles, rice
	Mashed potatoes without skin
Dairy	Milkshakes
	Pudding, custard
	Soft cheeses
	Cottage cheese
	Ice cream, sherbet, sorbet
	Milk or milk substitutes
Fruits	Yogurt without nuts, seeds, or fruit
	Bananas
	Applesauce
	Cooked fruits without skins or seeds
Vegetables	Apple or grape juice
	Cooked or mashed vegetables without stems or seeds (eg, carrots or squash)
Protein	Eggs
	Tofu
	Smooth peanut butter
	Fish, turkey, chicken, or other meat (ie, not tough or stringy)
Other	Gravy
	Syrup
	Gelatin
	Chicken, beef, or vegetable broths
Beverages	Water, ice
	Soft drinks
	Coffee, tea
	Nutritional shakes

SUMMARY

POEM treats disorders of the esophagus without the need for surgery.

Patients can typically leave the hospital the same day as the procedure but will need a responsible care partner to take them home, as they may be drowsy from the anesthesia.

It is normal to have chest tightness or soreness post-procedure that will improve within days after the procedure.

PATIENT CONSENT

Patient consent was not required as no patients are mentioned in this article.

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