

Case Report

Laparoscopic Heller myotomy after multiple endoscopic injections and dilations: a case report

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ABSTRACT

Achalasia is a primary esophageal disease that affects the esophagus and lower esophageal sphincter (LES). Many medications have been used for achalasia. However, adverse reactions and a prevailing absence of potency have been reported with these therapies. The best management leads to disturbing LES with endoscopic dilation or surgically. This is a 58-year-old woman with a 25-year history of achalasia who has experienced laparoscopic Heller myotomy (LHM) with Toupet fundoplication due to persistent symptoms despite previous endoscopic interventions. The procedure successfully addressed thickened LES muscle layers and achieved positive postoperative results, with the patient's Eckardt score dropping from >9 to <3 . LHM with Toupet fundoplication proved its effectiveness in managing refractory type III achalasia. Despite concerns about postoperative reflux, the procedure offered substantial relief. Ongoing research will refine the balance between invasiveness and efficacy in such conditions.

Keywords: Achalasia, LES, LHM, Fundoplication, Peroral endoscopic myotomy

INTRODUCTION

Achalasia is a primary esophageal disease that alters the esophagus with a LES, which occurs in both genders and ages.¹ It is considered a rare condition, with a prevalence of 10 per 100,000 people.² It is slightly more frequent in females, with a ratio of 1.2:1.³ The cause of this condition is unobvious, although many assumptions have been discussed. Some theories assume an autoimmune phenomenon, viral infection, and genetic predisposition are the leading causes.⁴ In severe cases of achalasia, there are some features among patients. These include a dilated esophagus, a lack of peristalsis, and narrow space inside the distal esophagus in a typical "bird's beak" shape.⁵ Many medications have been used to manage this condition. However, these therapies have reported adverse reactions and a prevailing absence of potency as standard. The best therapies are intended to disrupt the LES either with endoscopic dilation or surgically. A decision analysis model was developed to manage achalasia, evaluating four strategies. These strategies are

LHM and partial fundoplication, pneumatic dilation, botulinum toxin injection, and thoracoscopic Heller myotomy. According to the complications, repeated procedures are necessary, and overall treatment costs are high. Experts discovered that LHM with fundoplication was the favored therapeutic method unless the patient's risk of operative mortality was $>0.7\%$.⁶ We report a case of an achalasia female patient who was successfully managed with LHM after multiple endoscopic injections and dilations.

CASE REPORT

A 58-year-old woman with a 25-year history of achalasia was referred to the surgical clinic for possible surgical management. She has no previous medical history. She had persistent symptoms, including difficulty swallowing, eating, and drinking. She mentioned feeling like food was trapped in her neck and chest. She also had heartburn and chest pain. She experienced a cough while eating or drinking and lost about 15 kilograms in 2 months, despite having a good appetite. A previous

history of vomiting unchewed food existed but without any fever, nausea, or bowel changes. Her medical history was unremarkable; the patient had no known allergies and was not on regular medications. She was married and had two children. Physical examination showed poor nutrition, with a weight of 39 kg and a height of 160 cm. Vitals were RR19/min, HR75/min, BP105/70, and SpO₂ 96%. She had undergone four endoscopic botulinum toxin injections and six balloon dilations over the last 25 years. The last endoscopic intervention was nine months ago, but the symptoms persist. The patient experienced many studies to determine the cause of her symptoms. A barium swallow study showed the bird's beak appearance and a dilated esophagus above the narrowed region. Later, esophageal manometry was conducted, confirming achalasia type 3. Esophagogastroduodenoscopy showed a dilated esophagus and a very tight gastroesophageal junction, with saliva retention and food stasis. Due to the previous multiple endoscopic interventions with injections and balloon dilatation, in addition to their association with the risk of perforation and side effects, the gastroenterologist decided to avoid the peripheral endoscopic myotomy (POEM) procedure for this patient. The patient was prepared for the operation and received general anesthesia and the rapid sequence induction technique. The LHM with Toupet fundoplication was performed on the patient. LES muscle layers had become thickened, hypertrophied, and fibrotic, with abnormal anatomic planes. Small bleeding was encountered in the bigging, which was managed succinctly with adrenaline-0.002% (1:50,000)-soaked gauze. The incised greater omentum was used to cover the myotomy and fundoplication areas at the end of the procedure. A postoperative gastrografin swallow was performed on the first postoperative day to rule out any leakage or occlusion. The patients with a positive gastrografin study (100% emptying at 2 minutes; 3 cm height) began on a liquid diet, transitioned to a soft diet for 2-3 weeks, and then resumed their regular diet. The patient was delighted with the result, and she has a postoperative Eckardt score of <3, compared with >9 preoperatively.

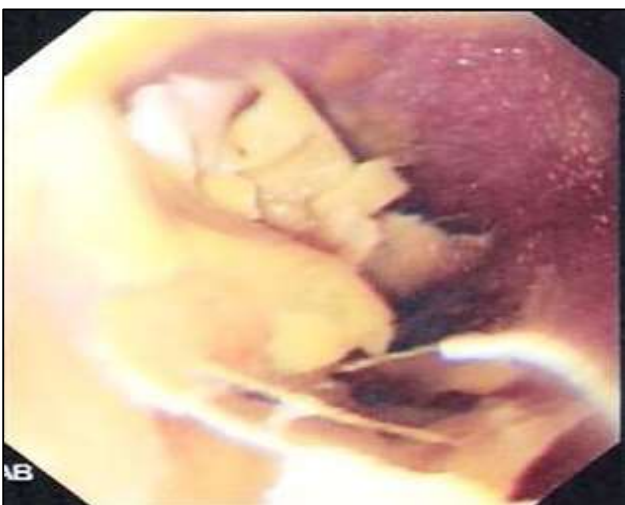


Figure 1: Preoperative endoscopic findings.

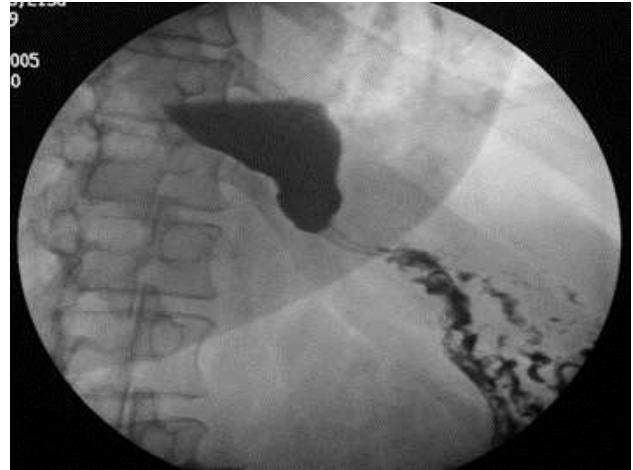


Figure 2: Preoperative barium swallow.

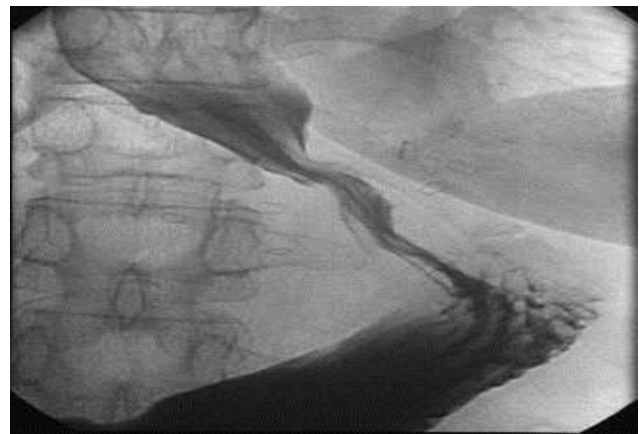


Figure 3: Postoperative gastrografin swallow.



Figure 4: The intraoperative omentoplastic covers the myotomy and fundoplication.

DISCUSSION

There are different manifestations of achalasia type I, II, and III. Achalasia type III patients experience chest pain.⁷

About 35% to 91% of patients mentioned weight loss during the first occurrence.⁸ The weight loss degree is mainly different, with an average weight loss of 20±16 lb.⁷ They also have the most inflammatory response and most challenging treatment type.⁹ Recently, it has been discussed that the POEM's ability to cause a larger myotomy proximal to the LES may significantly benefit patients with type III achalasia. However, this has yet to be approved by more trials.¹⁰ As in type III achalasia, an incomplete decrease may manifest as a breakthrough contraction during repetitive swallowing.¹¹

In this case, the patient experienced multiple endoscopic interventions with injections and balloon dilatation. This makes it riskier to perform POEM as the patient has a high incidence of pathologic reflux. Endoscopic management of achalasia, specifically POEM, has been gaining popularity in recent years as an alternative to LHM. POEM has been found to have efficacy and invasiveness comparable to LHM. LHM is a minimally invasive surgical procedure, while POEM is an endoscopic approach, which may result in a faster recovery and a shorter hospital stay. One disadvantage of endoscopic treatments, including POEM, is the need for repeated treatments due to the potential for recurrence. This may not be the case with LHM, which is usually a one-time procedure.¹² This caused the gastroenterologist to avoid the POEM procedure and perform LHM with partial fundoplication under certain conditions. LHM with partial fundoplication helps improve dysphagia in most achalasia patients.¹³ Since gastric contents refluxing into the peristaltic esophagus could lead to esophagitis, peptic strictures, Barrett's esophagus, and even esophageal carcinoma, including a partial fundoplication is highly crucial.¹⁴

The success rate of LHM with Toupet fundoplication in treating dysphagia and reflux symptoms is generally high. According to a study published in JAMA Surgery, in most patients with achalasia, this procedure offers perfect relief of dysphagia with minor intraoperative and perioperative morbidity and mortality. Postoperative reflux manifests as a problem in 33.3% of patients, but these patients can be closely monitored and treated with medications.¹⁵ A systematic review and meta-analysis of randomized controlled trials also found that the Dor and Toupet fundoplication after LHM seems to be proportional in terms of abnormal acid exposure and dysphagia after surgery.¹⁶

Bleeding is a potential risk during and after LHM due to the accidental injury of blood vessels around the esophagus and LES. In this case, we used diluted adrenaline-soaked gauze, which helped manage bleeding during LHM.¹⁷ This method is particularly useful in achieving hemostasis and preventing mucosal injury.¹⁸ The greater omentum, with its specific properties of defense, detersion, and revascularization, offers excellent possibilities for the repair of complex defects.¹⁹ While the specific use of omentoplasty with incised greater

omentum following toupet fundoplication is not explicitly discussed in the literature, the general benefits of omentoplasty in covering defects and promoting revascularization suggest its potential utility in covering myotomy and fundoplication areas.

Finally, we recommend that gastroenterologists be cautious before injecting Botox in the anterior space of the LES. Botox, or botulinum toxin, is used in gastroenterology to treat conditions such as achalasia and gastroparesis. The possibility of fibrosis formation in the anterior space of the LES warrants caution before injecting Botox in this area. Even though the injection is generally considered safe, potential complications include bleeding and infection, albeit very rare. The use of Botox in the LES should be approached with care due to the risk of fibrosis formation and other adverse effects.²⁰

CONCLUSION

In summary, type III achalasia presents challenges characterized by chest pain, significant weight loss, and heightened inflammatory responses. In our case, due to the patient's history of multiple endoscopic interventions, LHM with Toupet fundoplication was chosen over POEM to mitigate the risk of pathologic reflux. The success of this surgical approach in relieving dysphagia and reflux symptoms is high, though postoperative reflux remains a concern in some cases. Diluted adrenaline-soaked gauze proves effective in managing potential bleeding risks during the procedure.

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