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## **A Review of Peroral Endoscopic Myotomy for Achalasia**

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### **ABSTRACT**

Peroral endoscopic myotomy (POEM) is a form of transluminal endoscopic natural orifice surgery (NOTES) that uses the beginnings of submucosal endoscopy to make the endoscopic equivalent of a surgical myotomy. POEM can be done in most patients who have primary idiopathic achalasia demonstrated manometrically symptomatic. Previous therapies for achalasia, such as pneumatic balloon dilation, botulinum toxin injection, or surgical myotomy, are not contraindications to POEM. Generally, POEM is done in 4 continuous steps: incision in the mucosa, construction of a submucosal tunnel, myotomy and closure of the incision in the mucosa. Endoscopic management has been revolutionary for the treatment of achalasia and other pathological entities, however, it must be performed in specialized centres and by endoscopist surgeons with extensive experience in the subject, to reduce the associated morbidity and mortality

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### **INTRODUCTION**

Achalasia results from the progressive degeneration of ganglion cells in the myenteric plexus in the esophageal wall. It is characterized by the defeat of relaxation of the lower esophageal sphincter (LES), commonly in the company of a loss of peristalsis in the distal esophagus. The achalasia procedure aims to reduce the resting pressure in the LES to allow the passage of ingested material.<sup>1-4</sup>

Achalasia can be attempted with pneumatic dilation, botulinum toxin injection, or surgical myotomy. Heller's laparoscopic myotomy is the most commonly performed method of the surgical myotomy.

Peroral endoscopic myotomy (POEM) is the endoscopic equivalent of surgical myotomy and a newer technique for the achalasia procedure. POEM uses the beginnings of submucosal endoscopy to change the submucosal layer in the esophagus and proximal stomach into a tunnel through which esophageal and gastric myotomies are performed using a flexible endoscope. Since POEM is done by the peroral route without incisions in the chest or belly, it is a form of transluminal endoscopic surgery by a natural orifice (NOTES).<sup>1-4</sup>

### **RESULTS OF THE POEM FOR THE ACHALASIA**

POEM can be done in most patients who have idiopathic primary symptomatic achalasia tested manometrically. POEM was approved as the primary procedure for type I and

II achalasia (as a choice to pneumatic dilation and surgical myotomy) and as a beloved procedure for type III achalasia by the primary guidelines of society.<sup>4,5</sup>

Surgical technique: the POEM method is developed in 4 steps followed: 1) incision in the mucosa and entry into the submucosa, 2) construction of a submucosal tunnel, 3) myotomy and 4) closure of the incision in the mucosa.

Effectiveness and durability: POEM is quite effective in the short-term procedure of achalasia. According to a 2014 summary of 14 POEM studies, clinical triumph was determined as an Eckardt score following the  $\leq 3$  procedure and/or a  $>50\%$  decrease in lower esophageal sphincter pressure (LES), was performed in 82% to 100% of patients. Other studies documented similar improvements in patients after POEM using a timed barium esophagogram or quality of life assessment.<sup>4,5</sup>

The lasting success rate of POEM (usually determined as an Eckardt score  $\leq 3$ ) has been between 78 and 92% between 24 and 79 months. Less than 4 per cent of patients required a new procedure for achalasia. Patients with nonplastic achalasia (type I or II) have fared better than patients with spastic achalasia (type III) or other spastic oesophageal disorders.<sup>4,5</sup>

Comparison with surgical myotomy: the effectiveness and stability of POEM were compared with those of laparoscopic Heller myotomy (LHM). In a randomized trial of 221 patients with idiopathic achalasia, POEM and LHM with Dor's

## A Review of Peroral Endoscopic Myotomy for Achalasia

fundoplication have had the same success in controlling the evidence (Eckardt indication score  $\leq 3$ ) at both years (83 to 82 per cent). Compared to LHM, POEM was associated with a lower rate of serious adverse events (2.7% vs. 7.3%) but with a higher rate of reflux esophagitis (57% vs. 20% at 3 months; 44% vs. 29% at both years).<sup>4,5</sup>

According to today's literature, patients with achalasia should be informed that POEM and LHM are equally effective in relieving swallowing efforts, but POEM creates more reflux and LHM has more adverse events. Therefore, voting may depend on accessible local resources and patient/surgeon preference.<sup>4,5</sup>

POEM for frequent achalasia: POEM was shown to be possible, safe and effective in the procedure of patients who have failed other endoscopic or past surgical treatments for achalasia.<sup>4,5</sup>

According to the World Oral Endoscopic Myotomy Survey (POEMS), 40% of POEM methods have been performed in patients with previous endoscopic procedures for achalasia. Although submucosal fibrosis caused by the previous injection of botulinum toxin or pneumatic dilation may make dissection more challenging, general agreement among POEM operators has been that effectiveness was not observed to be compromised in such patients.<sup>4,6</sup>

Adverse Events: Once experienced operators do, POEM is a safe method that is associated with a low rate of postoperative adverse events. Most of the complications that occur after POEM have the possibility of managing expectantly, medically or endoscopically.<sup>4,6</sup>

### CONCLUSIONS

Endoscopic management has been revolutionary for the treatment of achalasia and other pathological entities, however, it must be performed in specialized centres and by endoscopist surgeons with extensive experience in the subject, to reduce the associated morbidity and mortality.

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