

# COMPARATIVE NARRATIVE REVIEW OF POEM VERSUS CONVENTIONAL THERAPIES FOR ALL SUBTYPES OF ACHALASIA CARDIA

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**Background:** Achalasia cardia is managed with interventions aimed at relieving outflow obstruction at the lower esophageal sphincter. Peroral endoscopic myotomy (POEM) is a newer, minimally invasive option whose efficacy and safety merit comparison to conventional therapies - pneumatic dilation (PD), laparoscopic Heller myotomy (LHM) with fundoplication, botulinum toxin injection (BTI), and pharmacologic therapy.

**Methods:** We performed a comprehensive review and meta-analysis of studies (2009-2024) comparing POEM with conventional treatments. Clinical endpoints analyzed included symptom relief and Eckardt score improvement, treatment success rates at short-term (1-

2 years) and long-term follow-up ( $\geq 5$  years), complication rates, post-procedure reflux, incidence, quality of life (QOL) outcomes, and cost-effectiveness. Data from randomized controlled trials (RCTs), observation studies and meta-analyses were synthesized. Statistical measures (risk ratios for treatment success, mean differences in Eckardt score) are extracted or calculated from published reports to compare efficacy and safety outcomes.

**Results:** POEM demonstrated comparable symptom relief to LHM and superior short-term and long-term follow-up. POEM and LHM had equivalent 2-year in an RCT (non-inferiority met). POEM achieved greater long-term remission than PD: at 5 years, 81% of POEM patients versus 40% with a single PD protocol ( $P < 0.0001$ ). Eckardt scores improved similarly after POEM and LHM. POEM's safety profile was similar to LHM and PD, with low rates of serious adverse events. Reflux was more frequent after POEM (up to 40% by 1-2 years) than after LHM with fundoplication or PD ( $P < 0.01$  for OR of post-POEM reflux vs PD). Despite this, most post-POEM reflux was mild or asymptomatic, and symptom scores or QOL did not significantly differ from LHM in studies.

Quality-of-life measures improved substantially after all effective treatments; relief of dysphagia was the primary driver of QOL gains, with POEM and LHM yielding similar postoperative QOL scores. Regarding cost-effectiveness, short-term analyses indicated POEM can be cost-effective relative to LHM (incremental cost

~\$9,000 per quality-adjusted life year), and decision models suggested PD is cost-efficient for type II achalasia, whereas POEM is favored for types I and III.

**Conclusions:** POEM is at least as effective as LHM and more effective than PD in achieving durable symptom relief in achalasia, with a similar safety profile. POEM's main trade-off is a higher incidence of post-procedure reflux, though often clinically mild. High-resolution esophageal manometry (HREM) plays a crucial role in therapy selection and tailoring, as it informs achalasia subtype and guides POEM technique for optimal outcomes. Future research should refine strategies to mitigate GERD after POEM (such as combination procedures) and further clarify long-term cost-effectiveness and QOL outcome