Canadian Experience of Per Oral Endoscopic Myotomy (POEM) for the Treatment of Achalasia: a Retrospective Study

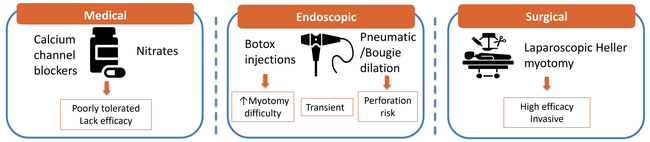
Poole M[1] and Hong D[1].

1. Department of Surgery, McMaster University, Hamilton, Ontario, Canada

BACKGROUND

Management of achalasia

- Targeted at relaxing pressure at the lower esophageal sphincter (LES)



- Recently, POEM has emerged as a modality to perform esophagomyotomy using a minimally invasive approach

POEM

- Multicenter studies: 80-95% achalasia remission at 1 year[1,2,3]
- Decreased hospital stay, decreased narcotic use, similar efficacy as Heller myotomy
- POEM now first line treatment in multiple guidelines (Japanese, European, American, international)

In Canada, two institutions have shown promising results of single-centre experiences with POEM[4,5]

PURPOSE

The objective of this study was to capture the national experience with POEM in Canada for the elective treatment of primary achalasia.

METHODS

Study design

- Retrospective chart review from 2010-2022
- Inclusion criteria
  - ☑ Primary achalasia
  - ☑ Elective POEM



- 5 Canadian institutions:
  1. St. Joseph's Healthcare Hamilton*
  2. Kingston Health Sciences Centre
  3. University Health Network Toronto
  4. The Surrey Memorial Hospital
  5. The Montreal Sacred Heart Hospital

Outcomes

Clinical response = Eckhardt score ≤ 3

Score	Weight loss (kg)	Dysphagia	Retrosternal pain	Regurgitation
0	None	None	None	None
1	<5	Occasional	Occasional	Occasional
2	5 – 10	Daily	Daily	Daily
3	>10	Each meal	Each meal	Each meal

Eckhardt Score: grading system for achalasia. Attribute points (0 – 3) for each symptom to obtain a total score (range 0 – 12).

1. Primary Outcome: clinical response at 1 month
2. Secondary Outcomes
   - Procedure related adverse events
   - Length of stay in hospital
   - Post-procedure gastroesophageal reflux disease (GERD)
   - Clinical response at 3, 6, 12 and 24 months and at last follow up

RESULTS

***Results from one institution are shown (St. Joseph's Healthcare Hamilton). Results from the remaining four institutions are ongoing.**

Table 1 Patient Demographics.

Age (years, n = 131)		53 (41 – 65)
Biologic Sex (n = 131)	Male	64 (49%)
	Female	67 (51%)
ASA Class (n = 129)	1	4 (3%)
	2	33 (26%)
	3	77 (59%)
	4	15 (11%)
	5	0 (0%)
Achalasia Classification (n = 131)	1	25 (19%)
	2	46 (35%)
	3	25 (19%)
	Unclassified	35 (27%)
Previous interventions for achalasia (n = 131)	None	68 (52%)
	Pneumatic dilation	33 (25%)
	Bougie dilation	7 (5%)
	Botox injection	5 (4%)
	Laparoscopic Heller myotomy	3 (2%)
	POEM	3 (2%)

Data reported as median (interquartile range) or number of patients (percentages).

Table 2 Operative details.

Successful completion (n = 131)		129 (98%)
Duration (minutes, n = 121)		70 (54 – 85)
Location of myotomy (n = 128)	Anterior	120 (94%)
	Posterior	8 (6%)
Submucosal tunnel length (cm, n = 126)		14 (13 – 15)
Myotomy length (cm, n = 129)		11 (10 – 13)
Number of clips to close mucosectomy (n = 124)		6 (5 – 7)
Length of stay in hospital (days, n = 129)	Median	0 (0 – 0)
	Same day	109 (84%)
	1 day	15 (12%)
	>1 day	5 (4%)
Adverse events (n = 129)	None	104 (81%)
	Minor (Clavien-Dindo grade I – IIIa)	24 (19%)
	Major (Clavien-Dindo grade IIIb – V)	1 (1%)

Data reported as median (interquartile range) or number of patients (percentages).

Key Findings

98% of POEMs were successfully completed ☑

70 min was the average duration of POEM

0 days was the average length of stay after POEM

84% of patients were discharged home the same day as their procedure

20% of patients experienced an adverse event, with only 1% having a major adverse event

88% of patients had normalization of their LES pressure following POEM

99% of patients had a clinical response to POEM at 1 month

1 was the median Eckhardt score following POEM, with a median reduction in Eckhardt score of 5

32% of patients had a DeMeester score >15 following POEM

96% of GERD following POEM was treated with medical therapy

Table 3 Esophageal manometry and Eckhardt scores before and after POEM.

	Before POEM	After POEM
Lower esophageal sphincter resting pressure (mmHg, n = 113, 67)	43.3 (28.65 – 57.15)	17.5 (12.0 – 22.7)
Lower esophageal sphincter residual pressure (mmHg, n = 113, 67)	25.5 (28.65 – 37.90)	9.2 (6.5 – 11.5)
Lower esophageal sphincter residual pressure < 15mmHg (n = 113,67)	8 (1%)	59 (88%)
Eckhardt Score (n = 86, 113)	7 (5 – 9)	1 (0 – 3)
Eckhardt score ≤ 3 (n = 86, 113)	0 (0%)	96 (85%)

Data reported as median (interquartile range) or number of patients (percentages).

Table 4 Clinical response to POEM.

Eckhardt score ≤ 3 at 1 month (n = 102)		101 (99%)
Eckhardt score ≤ 3 at 3 months (n = 100)		98 (98%)
Eckhardt score ≤ 3 at 6 months (n = 96)		92 (96%)
Eckhardt score ≤ 3 at 12 months (n = 76)		70 (92%)
Eckhardt score ≤ 3 at 24 months (n = 50)		39 (78%)
Median follow up time (months, n = 113)		24 (12 – 43)
Reduction in Eckhardt score (n = 79)		5 (3 – 7)
Further treatment needed (n = 113)	None	102 (90%)
	Pneumatic dilation	5 (4%)
	Repeat POEM	6 (5%)

Data reported as median (interquartile range) or number of patients (percentages).

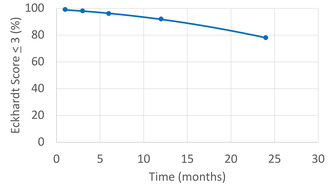


Figure 1. Clinical response (Eckhardt score ≤ 3) following POEM over time.

Table 5 Gastroesophageal reflux disease following POEM

DeMeester score > 15 on 24h pH monitoring study (n = 69)		22 (32%)
Esophagitis on esophagogastroduodenoscopy (n = 80)	None	67 (84%)
	Grade A	8 (10%)
	Grade B	3 (4%)
	Grade C	2 (3%)
	Grade D	0 (0%)
Reflux symptoms requiring PPI therapy >1 month (n = 114)		41 (36%)
GERD treatment required (n = 46)	Medical treatment	44 (96%)
	Surgical treatment	2 (4%)

Data reported as number of patients (percentages).

CONCLUSIONS

1. POEM is safe and feasible in Canada and can be successfully performed as a day procedure
2. POEM efficacy rates in Canada are in keeping with current international literature
3. GERD is a common side effect of POEM that can be successfully managed with medical therapy

FUTURE DIRECTIONS

- Obtain data from the remaining 4 institutions in Canada
- Utilize this data as the foundation to form Canadian achalasia guidelines to include POEM as a first-line therapy

REFERENCES

1. Shiwaku, H. et al. (2019). Multicenter collaborative retrospective evaluation of peroral endoscopic myotomy for esophageal achalasia: analysis of data from more than 1300 patients at eight facilities in Japan. *Surgical Endoscopy 2019 34:1*, *34*(1), 464–468.
2. Shiwaku, H. etal. (2020). Peroral endoscopic myotomy for achalasia: a prospective multicenter study in Japan. *Gastrointestinal Endoscopy*, *91*(5), 1037-1044.e2.
3. Von Renteln, D. et al. (2013). Peroral Endoscopic Myotomy for the Treatment of Achalasia: An International Prospective Multicenter Study. *Gastroenterology*, *145*(2), 309-311.e3.
4. Hong, D. et al. (2015). Early clinical experience with the POEM procedure for Achalasia. *Canadian Journal of Surgery*, *58*(6), 389–393.
5. Rai, M., Woo, M., & Bechara, R. (2021). The Canadian POEM Experience: The First 50 Patients. *Journal of the Canadian Association of Gastroenterology*, *4*(3), 110–114.