# Predictors of Pneumoperitoneum During Peroral Endoscopic Myotomy (POEM)

Saher-Zahra Khan MD[1,2], Christina Boutros DO[1,2], Jamie Benson MD[1,2], Joshua Lyons MD[1,2], Daniel Hashimoto MD MSTR[1,2], Jeffrey M Marks MD FACS FASGE[1,2]
[1]University Hospitals Cleveland Medical Center, Cleveland, OH [2]Case Western Reserve University, Cleveland, OH

## Introduction

**Insufflation during POEM can cause:**

- **Subcutaneous Emphysema**
- **Pneumothorax**
- **Pneumomediastinum**
- **Pneumoperitoneum**

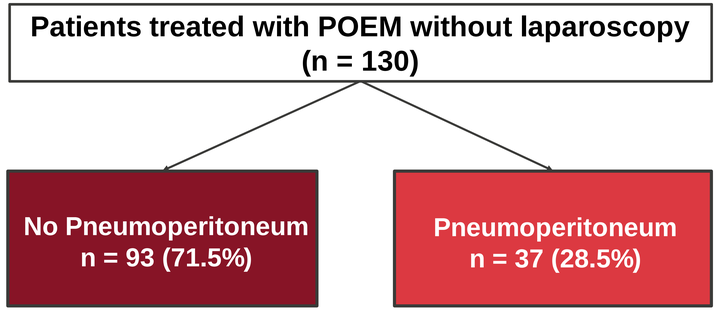
**Why is pneumoperitoneum a problem?**

- **Abdominal Compartment Syndrome**
- **Ventilation Challenges**

**Aim: Assess predictors of pneumoperitoneum in patients undergoing POEM**

## Methods

- **Retrospective chart review 2011-2022**
- **Single tertiary care institution**
- **Comparison: Chi squared or Fisher's exact, T-test**
- **Multivariable logistic regression**

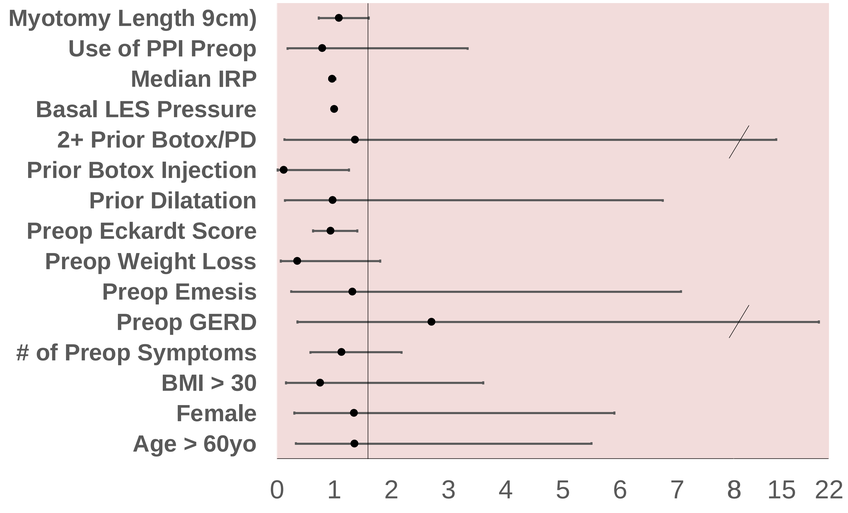



## Results

**Table 1. Comparison of Demographics and preoperative factors**

| | Total (n = 130) | No pneumo (n = 93) | Pneumo (n = 37) | P-value |
|---|---|---|---|---|
| Age > 60 | 83 (63.8%) | 58 (62.4%) | 25 (67.6%) | 0.58 |
| Female | 58 (45.7%) | 44 (48.4%) | 14 (38.9%) | 0.33 |
| BMI > 30 | 52 (40.0%) | 36 (38.7%) | 16 (43.2%) | 0.63 |
| Charlson-Deyo = 0 | 25 (19.2%) | 19 (20.4%) | 6 (16.2%) | 0.84 |
| 1, 2 | 32 (24.6%) | 23 (24.7%) | 9 (24.3%) | |
| 3+ | 73 (56.2%) | 51 (54.8%) | 22 (59.5%) | |
| Preop Eckardt Score | 4.6 (2.2) | 4.6 (2.2) | 4.6 (2.2) | 0.92 |
| Preop GERD | 39 (30.0%) | 26 (28.0%) | 13 (35.1%) | 0.42 |
| Preop Emesis | 36 (27.7%) | 22 (23.7%) | 14 (37.8%) | 0.1 |
| Preop Weight Loss | 57 (43.8%) | 39 (41.9%) | 18 (48.6%) | 0.49 |
| Use of Preop PPI | 71 (60.2%) | 51 (61.4%) | 20 (57.1%) | 0.66 |
| Hiatal Hernia | 23 (21.1%) | 14 (18.2%) | 9 (28.1%) | 0.58 |

**Figure 1. Forest Plot depicting Odds Ratios of developing Pneumoperitoneum with 95% Confidence Intervals**




## Results

**Table 2. Comparison of previous interventions, manometry measurements, and intraoperative events between cohorts**

| | Total (n = 130) | No pneumo (n = 93) | Pneumo (n = 37) | P-value |
|---|---|---|---|---|
| Prior Myotomy (No) | 118 (92.9%) | 85 (94.4%) | 33 (89.2%) | 0.46 |
| (Heller) | 8 ( 6.3%) | 4 ( 4.4%) | 4 (10.8%) | |
| Prior Dilatation | 40 (30.8%) | 30 (32.3%) | 10 (27.0%) | 0.56 |
| Prior Botox | 29 (22.3%) | 20 (21.5%) | 9 (24.3%) | 0.73 |
| 2+ Prior Botox/PD | 33 (26.8%) | 24 (27.6%) | 9 (25.0%) | 0.77 |
| Median IRP (mmHg) | 27.0 (13.0) | 27.7 (13.4) | 25.7 (12.5) | 0.53 |
| Basal LES Pressure (mmHg) | 45.7 (24.4) | 44.8 (24.4) | 48.0 (24.5) | 0.55 |
| Anterior Myotomy | 115 (95.0%) | 84 (96.6%) | 31 (91.2%) | 0.35 |
| Myotomy Length (cm) | 11.1 (2.1) | 11.0 (2.3) | 11.3 (1.7) | 0.48 |

## Conclusion

**No significant difference between patients that developed pneumoperitoneum and those who did not**

**Key Finding: No demographic, preoperative, or intraoperative factors that were assessed predicted the development of pneumoperitoneum**

**Be prepared to decompress any patient undergoing POEM with an angiocatheter**

