# Impedance planimetry (EndoFLIP) assisted laparoscopic esophagomyotomy in pediatric population

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## BACKGROUND

- Functional lumen imaging probe (EndoFLIP) is a diagnostic technology that assesses esophageal cross-sectional area via impedance planimetry during controlled volumetric distention.
- No data exists regarding EndoFLIP utilization in pediatric patients undergoing esophagomyotomy.

## OBJECTIVES

- The purpose of this study is to evaluate the use of EndoFLIP intraoperatively during laparoscopic esophagomyotomy in pediatric patients diagnosed with achalasia.

## METHODS

- Retrospective cohort study of patients undergoing EndoFLIP assisted laparoscopic esophagomyotomy for achalasia between January and August 2021 (n=6).
- Twenty-two patients with achalasia that underwent traditional laparoscopic esophagomyotomy between July 2014 and September 2019 served as a comparison.
- Primary outcome evaluated was resolution of symptoms at discharge.
- Secondary outcomes included change in distensibility index (DI), operative time, length of stay, time to regular diet, and reinterventions.

## RESULTS

Patient demographics that underwent EndoFLIP-assisted esophagomyotomy.

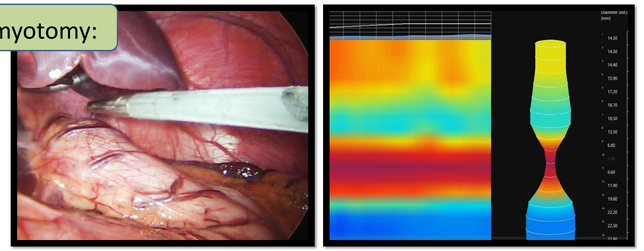
| Patient ID | Age | Gender | BMI | Type of achalasia | Prior interventions | Reintervention |
|---|---|---|---|---|---|---|
| 1 | 16 | F | 27.9 | II | None | Balloon dilation |
| 2 | 8 | M | 18.8 | I | Balloon dilation; NG feeds | None |
| 3 | 19 | F | 18.2 | II | None | None |
| 4 | 14 | F | 16.3 | II | NG feeds | None |
| 5 | 13 | F | 18.3 | II | None | None |
| 6 | 16 | F | 16.4 | II | Balloon dilation | None |

Pre and postoperative esophageal measurements.

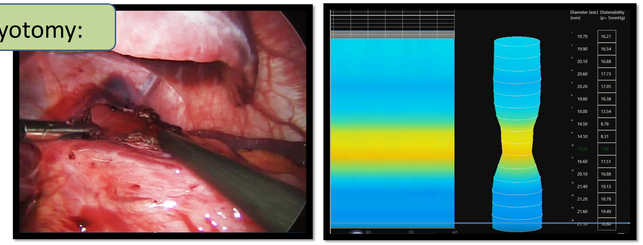
| Patient ID | Pre-operative DI (mm2/mmHg) | Post-operative DI (mm2/mmHg) | Δ in DI (mm2/mmHg) | Pre-operative EGJ diameter (mm) | Post-operative EGJ diameter (mm) | Δ in EGJ diameter (mm) | Myotomy length (cm) |
|---|---|---|---|---|---|---|---|
| 1 | 0.78 | 6.08 | 5.3 | 5 | 11.3 | 6.3 | 4.5 |
| 2 | 3 | 6 | 3 | 12.8 | NR | NR | 4 |
| 3 | 1.47 | 10.8 | 9.33 | NR | 18.1 | NR | 4 |
| 4 | 1.9 | 7.44 | 5.54 | 8.1 | 13.9 | 5.8 | 4 |
| 5 | 2.7 | 9.42 | 6.72 | 8.23 | 16.5 | 8.27 | 4 |
| 6 | 2.65 | 13.1 | 8.44 | 11.4 | 17.7 | 5.77 | 2 |

DI: distensibility index, EGJ: esophagogastric junction, NR: not recorded

Prior to myotomy:



After myotomy:



Group outcomes.

| Characteristic | EndoFLIP-assisted | Traditional | p value |
|---|---|---|---|
| Operative time (minutes) | 90 ± 15 | 185 ± 40 | <0.001 |
| Length of stay (days) | 1 | 2 | 0.11 |
| Time to soft diet (days) | 1 | 1.5 | 0.26 |
| Reintervention | 1 | 4 | 0.93 |

## CONCLUSIONS

1. All patients managed with EndoFLIP assistance had resolution of dysphagia and postprandial regurgitation following intervention.
2. Laparoscopic esophagomyotomy with intraoperative impedance planimetry results in similar short-term outcomes compared to traditional laparoscopic esophagomyotomy.
3. Targeted myotomy can be achieved with EndoFLIP guidance, and its intraoperative use provides an objective assessment of a sufficient myotomy.
4. This results in shorter myotomy length, eliminates the need for fundoplication, and reduces operative times.

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