

Minimally Invasive and Novel Therapeutics (M.I.N.T.) in Foregut Disease
September 29th -October 1st 2022

Perioperative evaluation of the LES

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The MetroHealth System



Outline

- Case introduction
- Current “best-practice”
- Case conclusion



Case Introduction

75-year-old presenting to the clinic for progressive reflux.
Had GERD and epigastric discomfort for years.
Reasonably maintained with lifestyle modification and PPI.

PMH: HLD, COPD

PSH: None

Meds: omeprazole 20 mg BID, albuterol

Physical exam: BMI: 25 kg/m². GERD-HRQL 15/50.

Work up

UGI

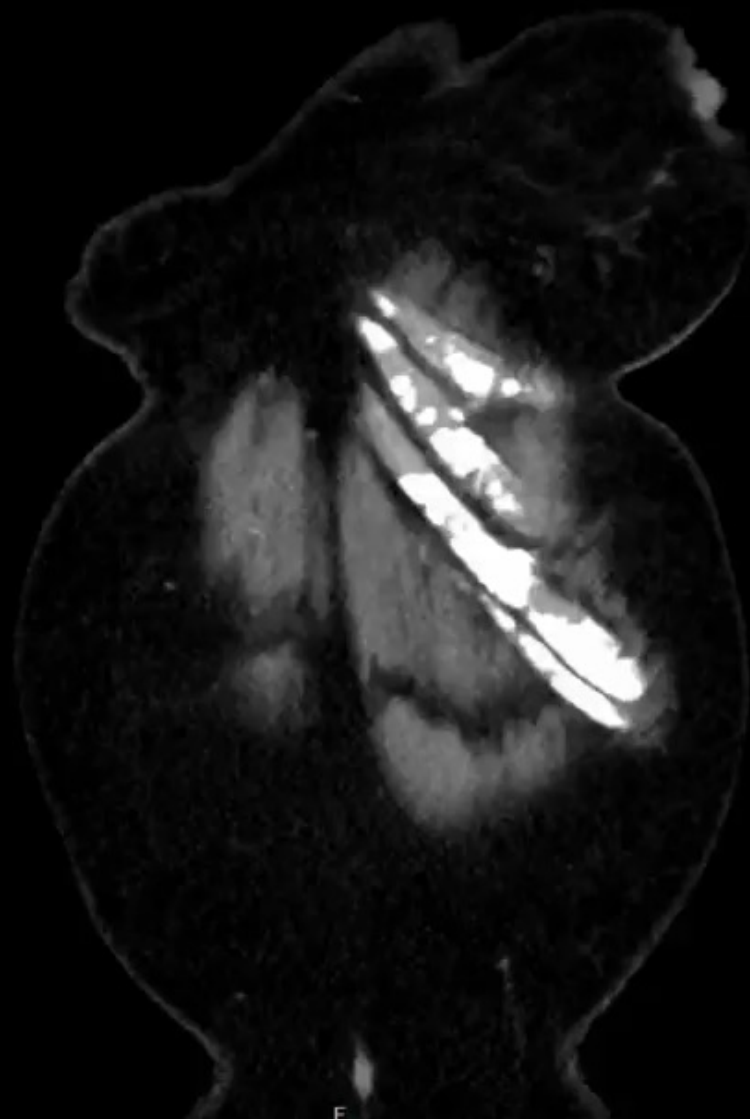


HARVARD
MEDICAL SCHOOL



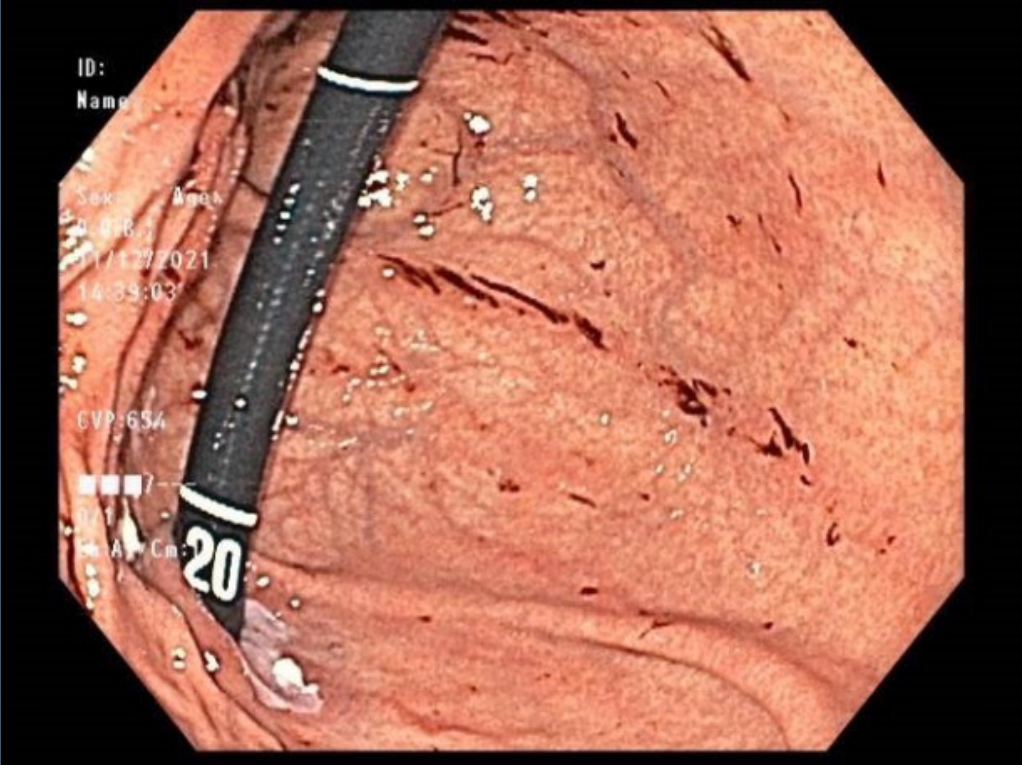
Work up

CT



Work up

EGD



What next?



Current “Best Practice” Intraoperative Evaluation

- How to measure the impact of hiatal closure?
 - (2 finger breadths—2 laparoscopic instruments)
- Is the wrap too tight?
 - Done over 50/56/60 Fr Bougie?
 - Endoscopic assessment



The Problem With These Tools

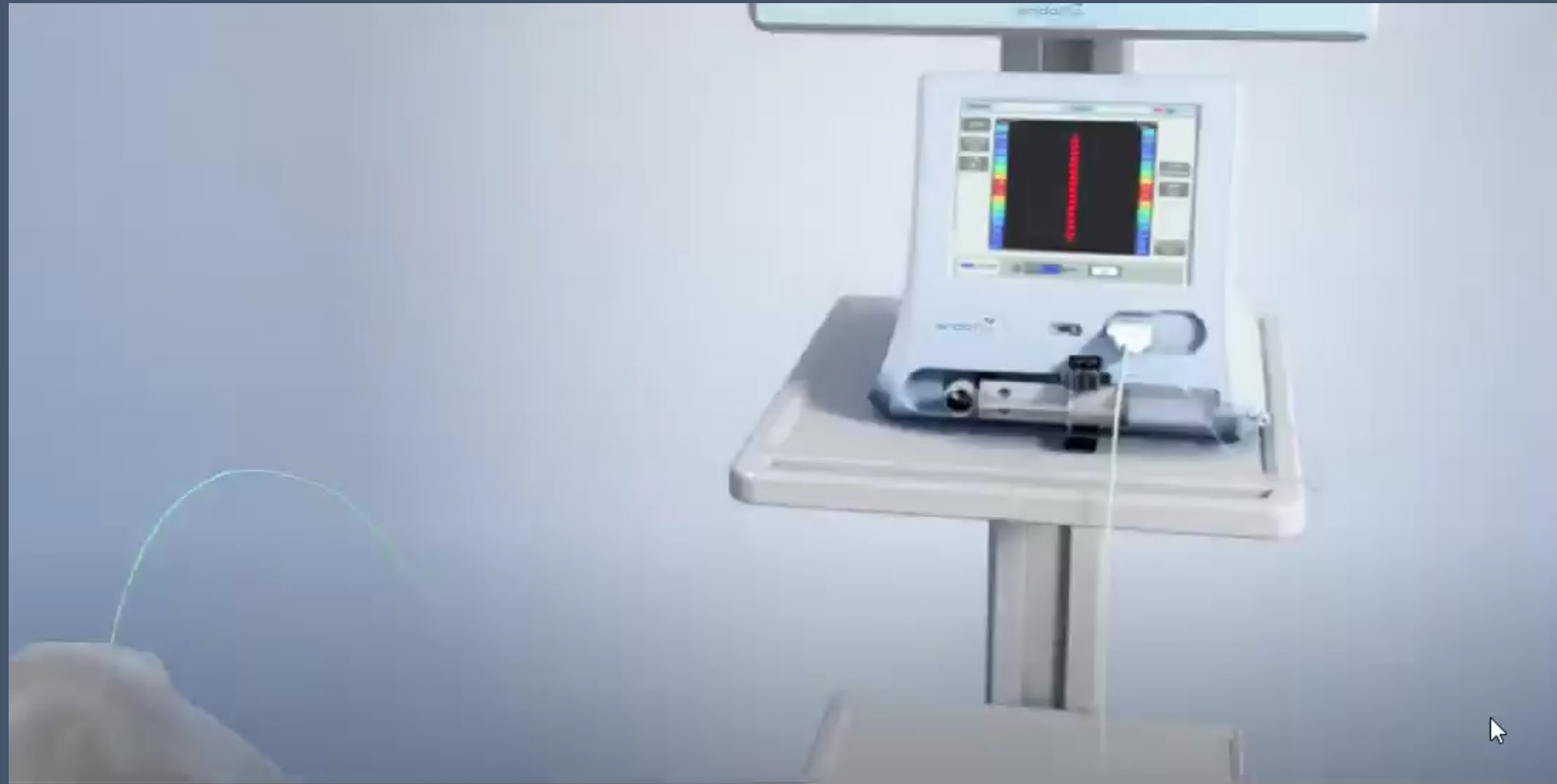
- Subjective
- User dependent
- Difficult to replicate
- False sense of security
 - “I removed my dilator and passed the video endoscope down and confirmed my wrap was not too tight.”

Current “Best Practice?”

- Intraoperative endoscopy
- Intraoperative measurements
- Crural closure +/- mesh
- Partial vs. full fundoplication (vs. none?)
- Decision points based on above



Endoscopic Functional Luminal Imaging Probe (EndoFLIP)



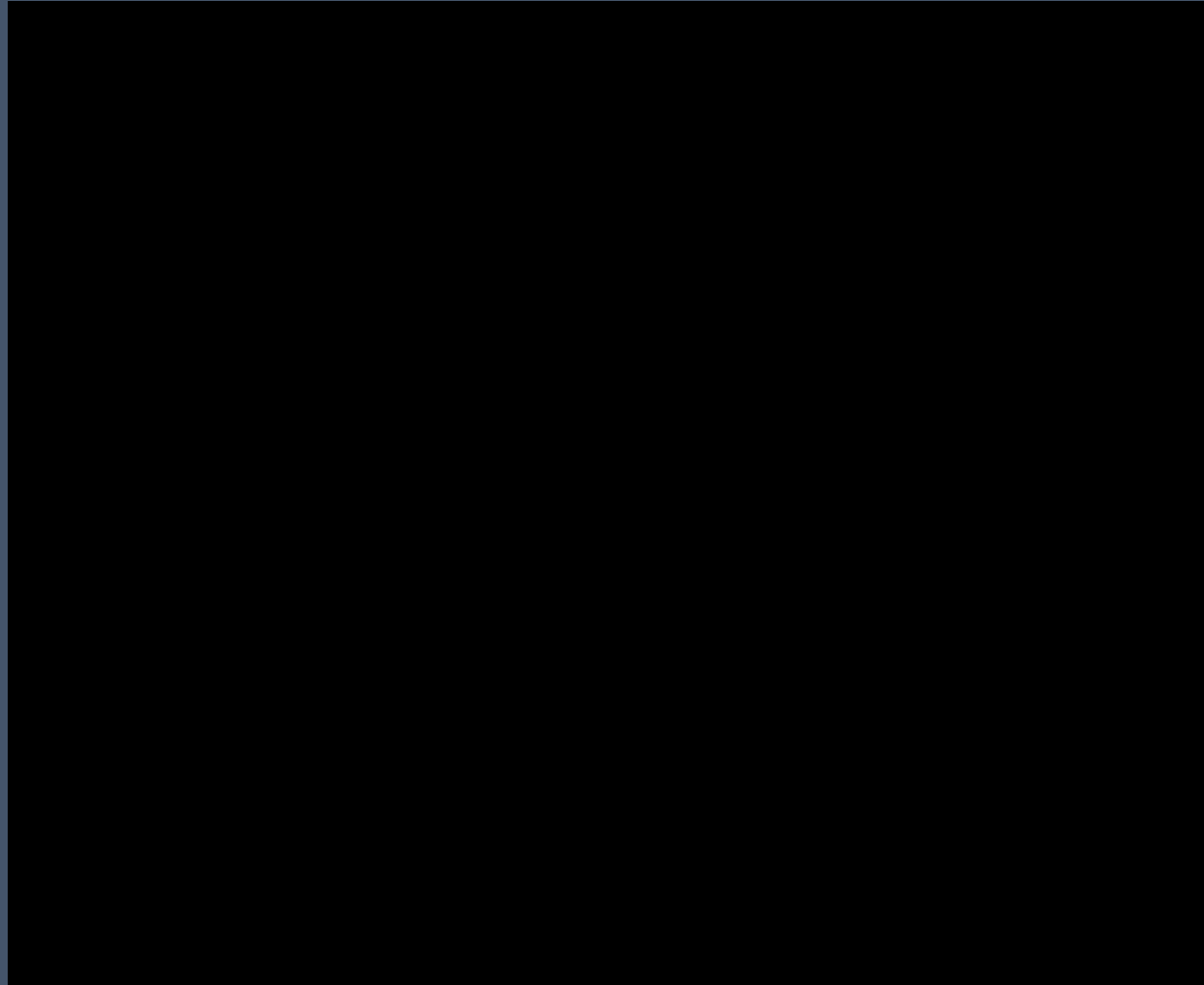
Case Conclusion



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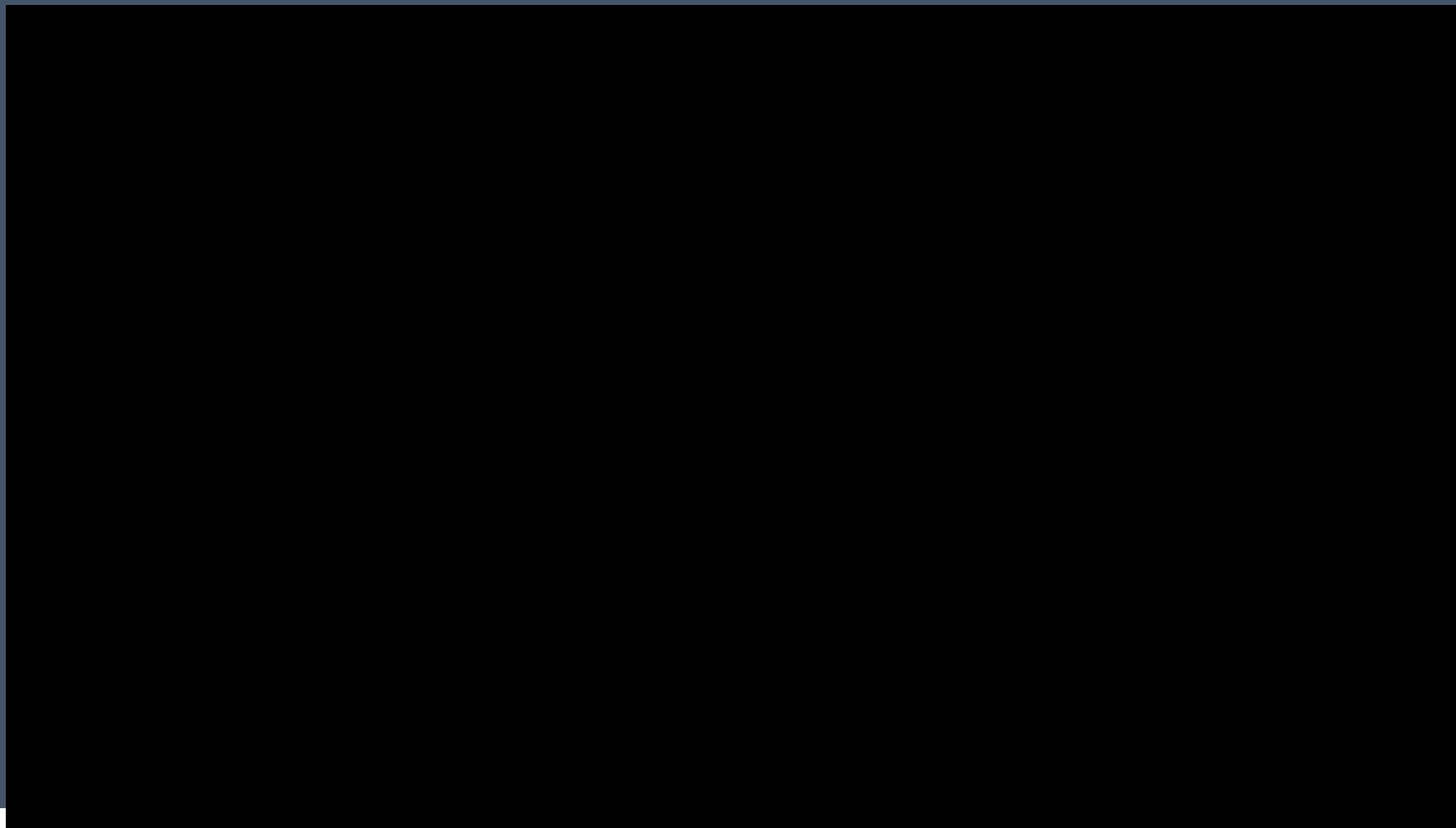
Robotic paraesophageal hernia repair



Robotic paraesophageal hernia repair: post hernia reduction



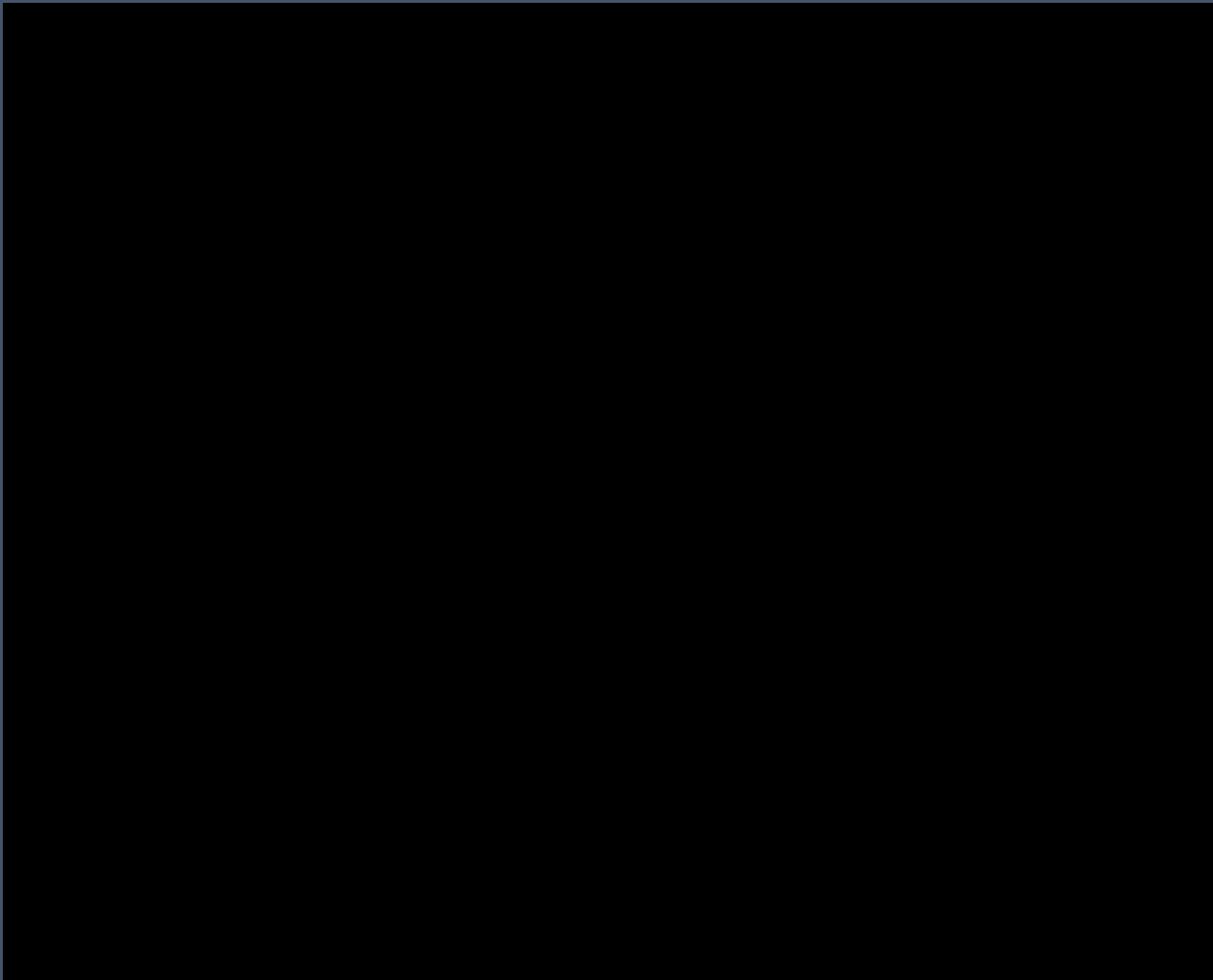
EndoFLIP: post dissection



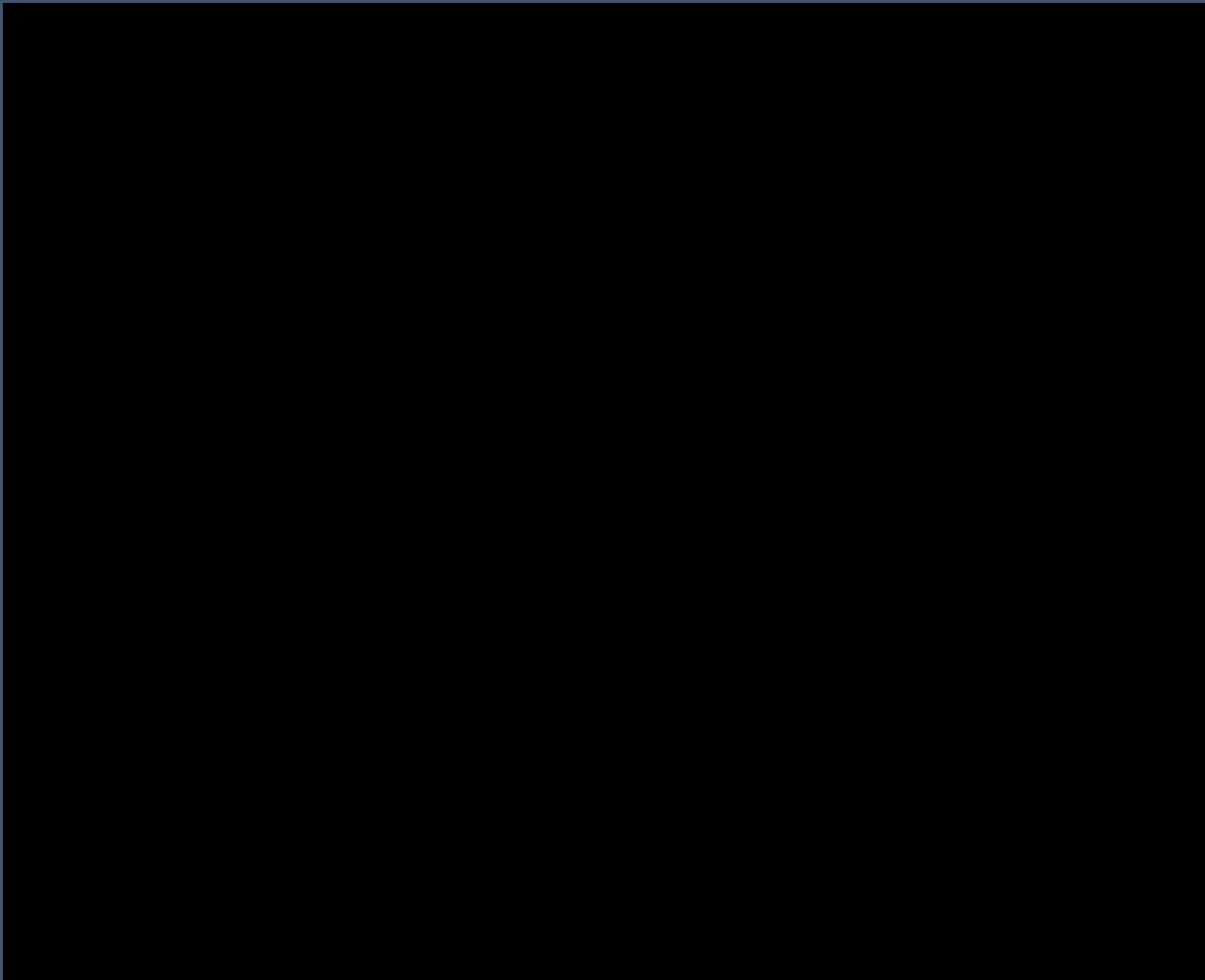
EndoFLIP measurements

Balloon Size (cc)	Diameter (mm)	Distensibility Index
Post hiatal dissection		
40	15	5
50	12.4	2.5

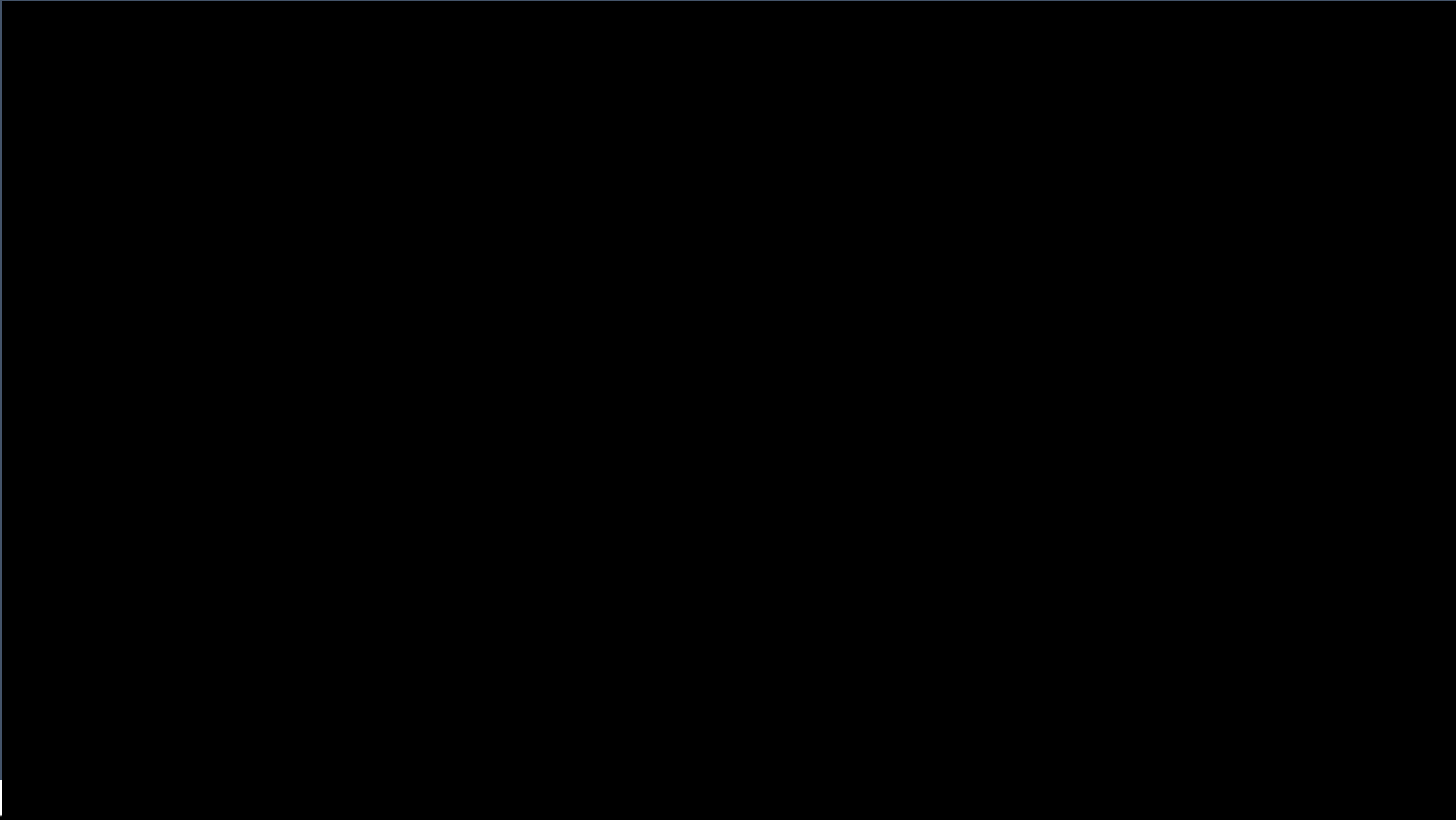
Robotic paraoesophageal hernia repair: crural closure



Robotic paraoesophageal hernia repair: mesh placement



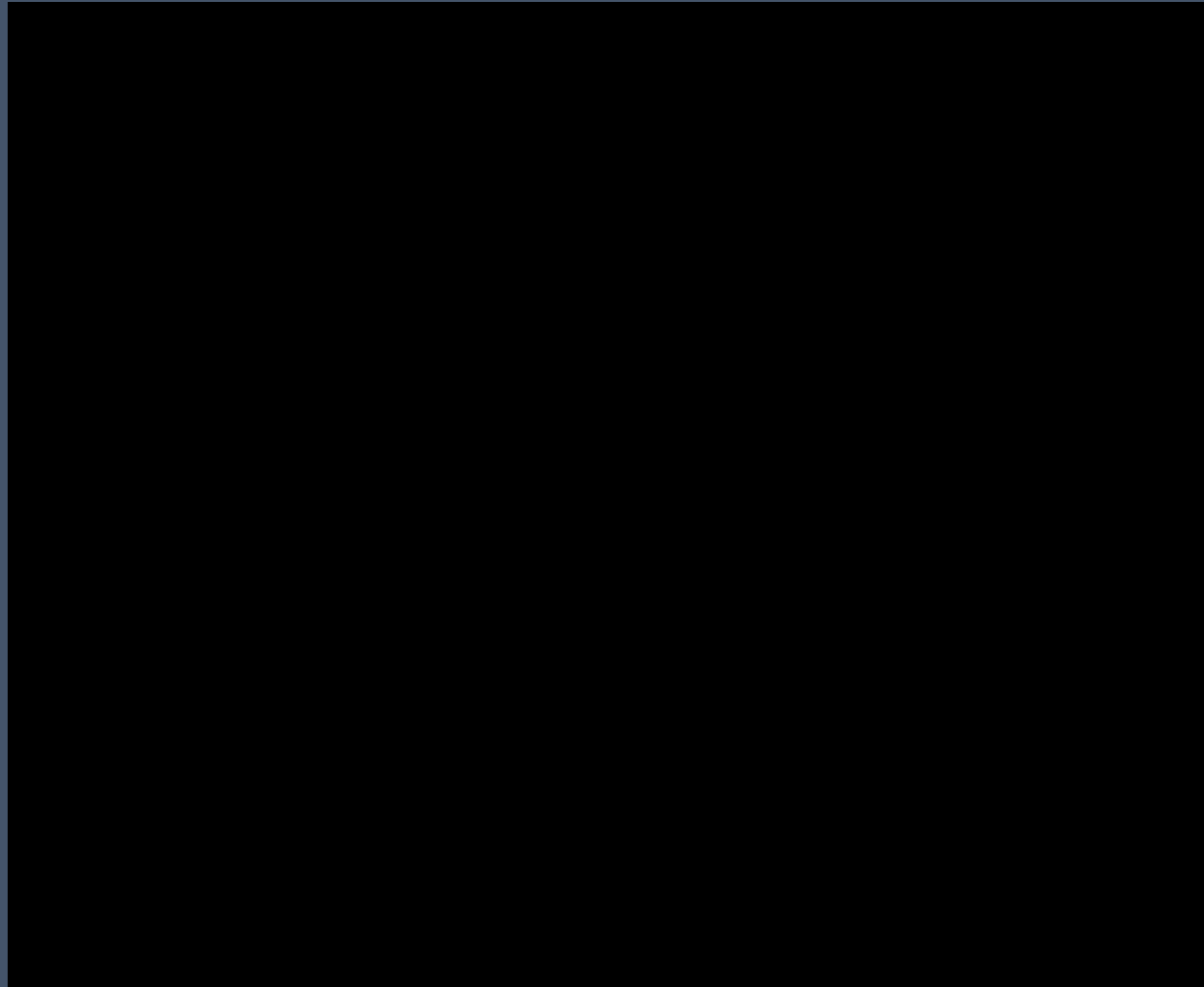
EndoFLIP: post hiatal closure



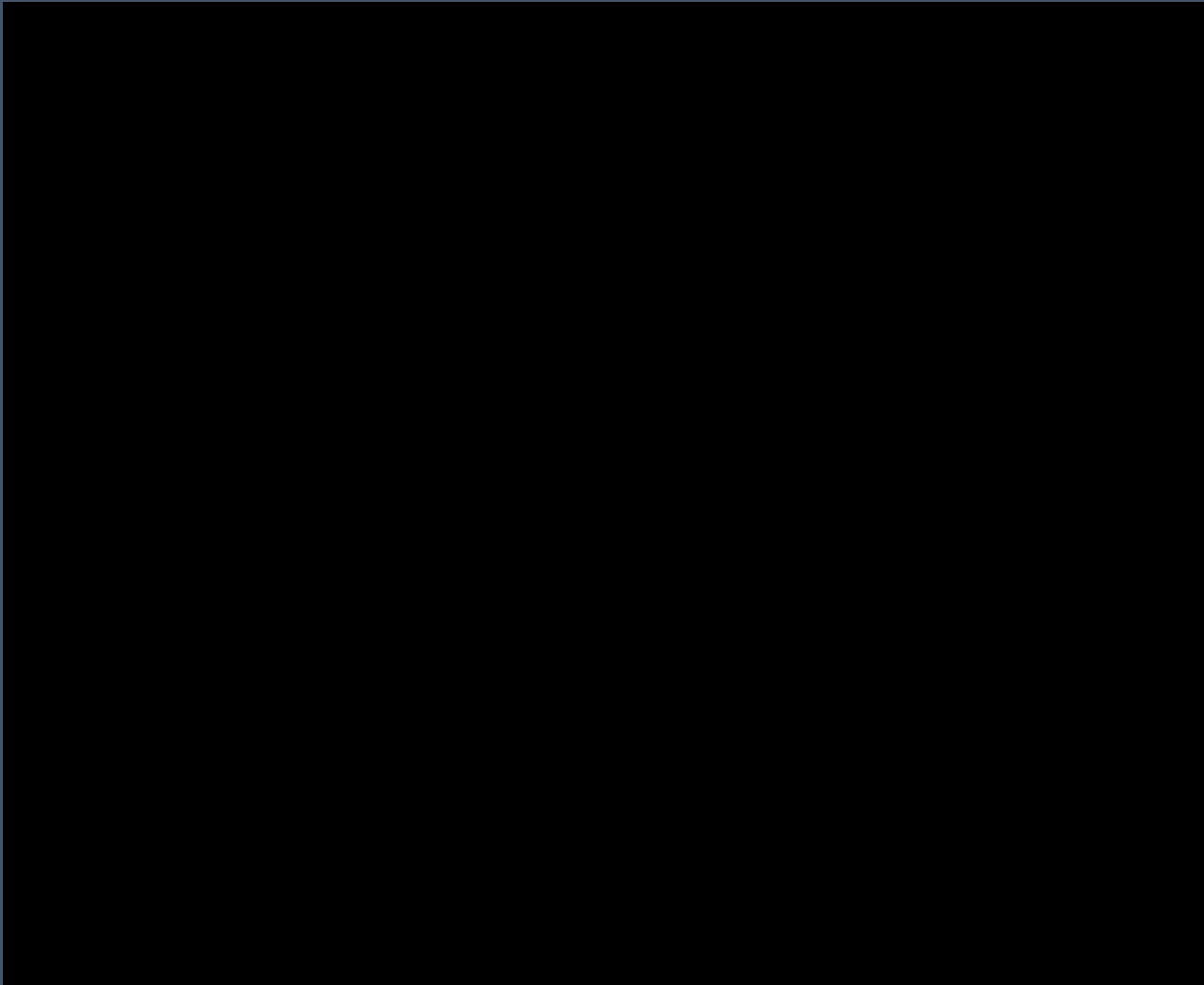
EndoFLIP measurements

Balloon Size (cc)	Diameter (mm)	Distensibility Index
Post hiatal dissection		
40	15	5
50	12.4	2.5
Post hiatal closure		
40	10	2
50	10	1.5

Robotic paraoesophageal hernia repair: anterior gastropexy



Robotic paraoesophageal hernia repair: final repair



Post op

UGI




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Literature

Experience-based expert consensus on the intra-operative usage of the endoflip impedance planimetry system

Bailey Su^{1,2}  · Christy Dunst³ · Jon Gould⁴ · Blair Jobe⁵ · Paul Severson⁶ · Kirsten Newhams⁵ · Aaron Sachs⁶ · Michael Ujiki¹

Guidelines on performing EndoFlip during ARS/HHR:

- Perform measurements at both 30 and/or 40 ml fill volume.
- Ensure intra-bag pressure is always > 15 mmHg at measured volume
- Timepoints to obtain measurements:
 - After crural dissection and hernia reduction
 - After crural closure (+/- mesh)
 - After fundoplication or after MSA placement



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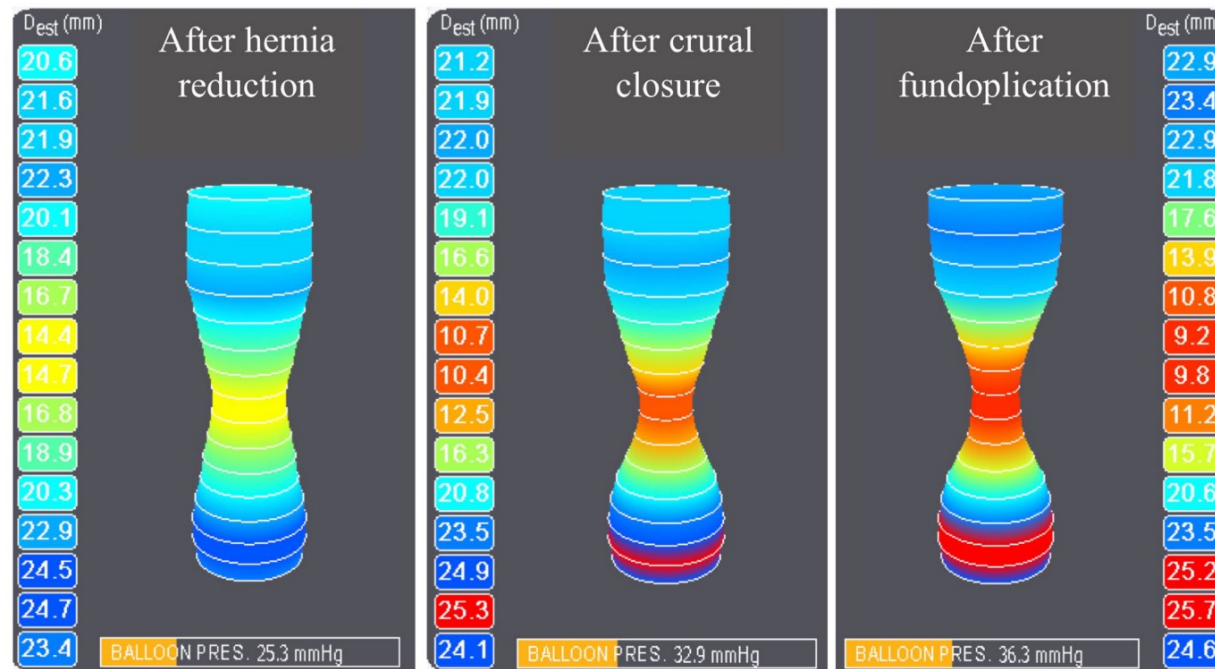
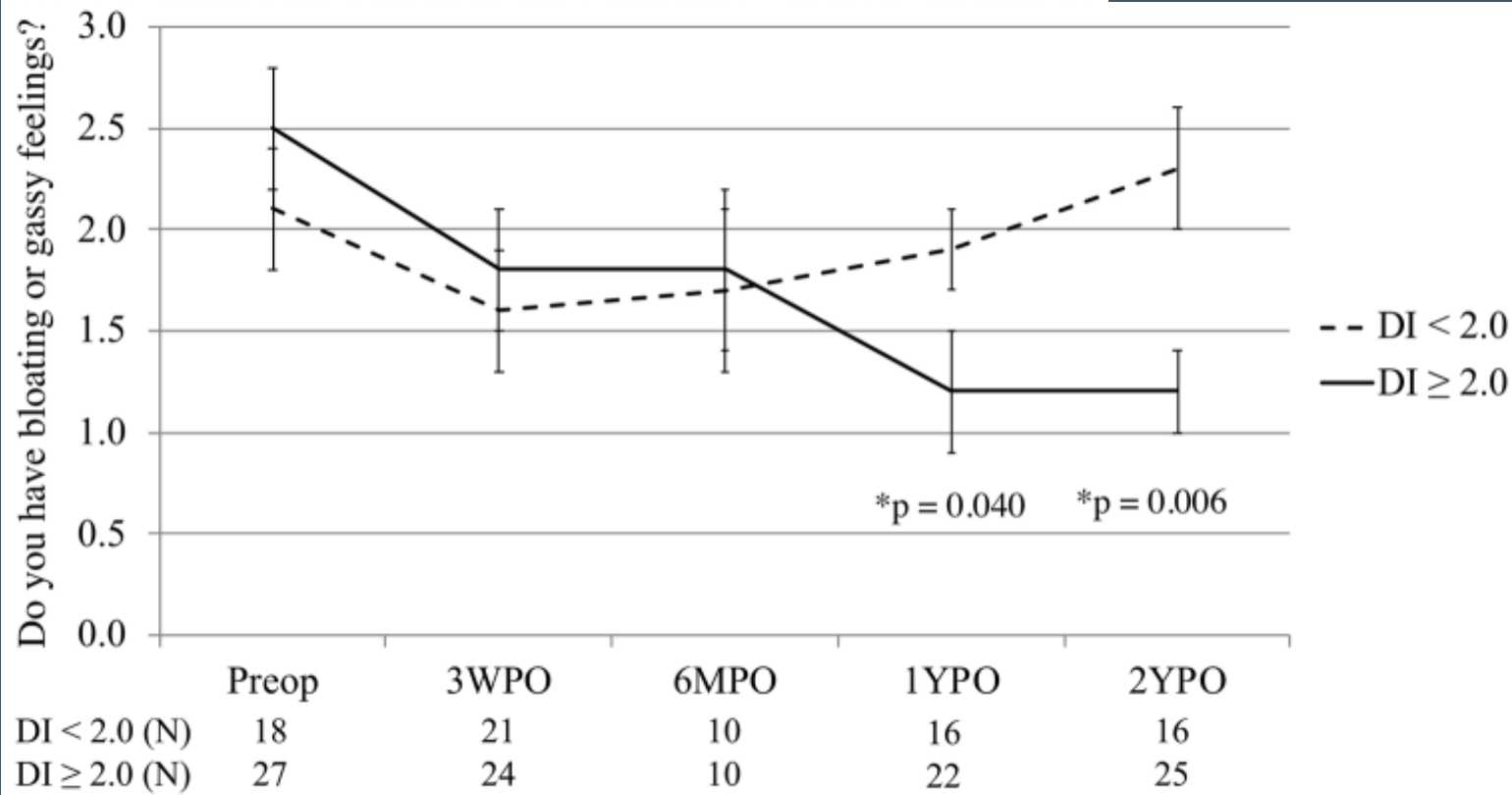


Fig. 4 Visual representation of changes in the gastroesophageal junction during hiatal hernia repair and fundoplication using a 40 ml volume fill

Literature

Using impedance planimetry (EndoFLIP™) in the operating room to assess gastroesophageal junction distensibility and predict patient outcomes following fundoplication

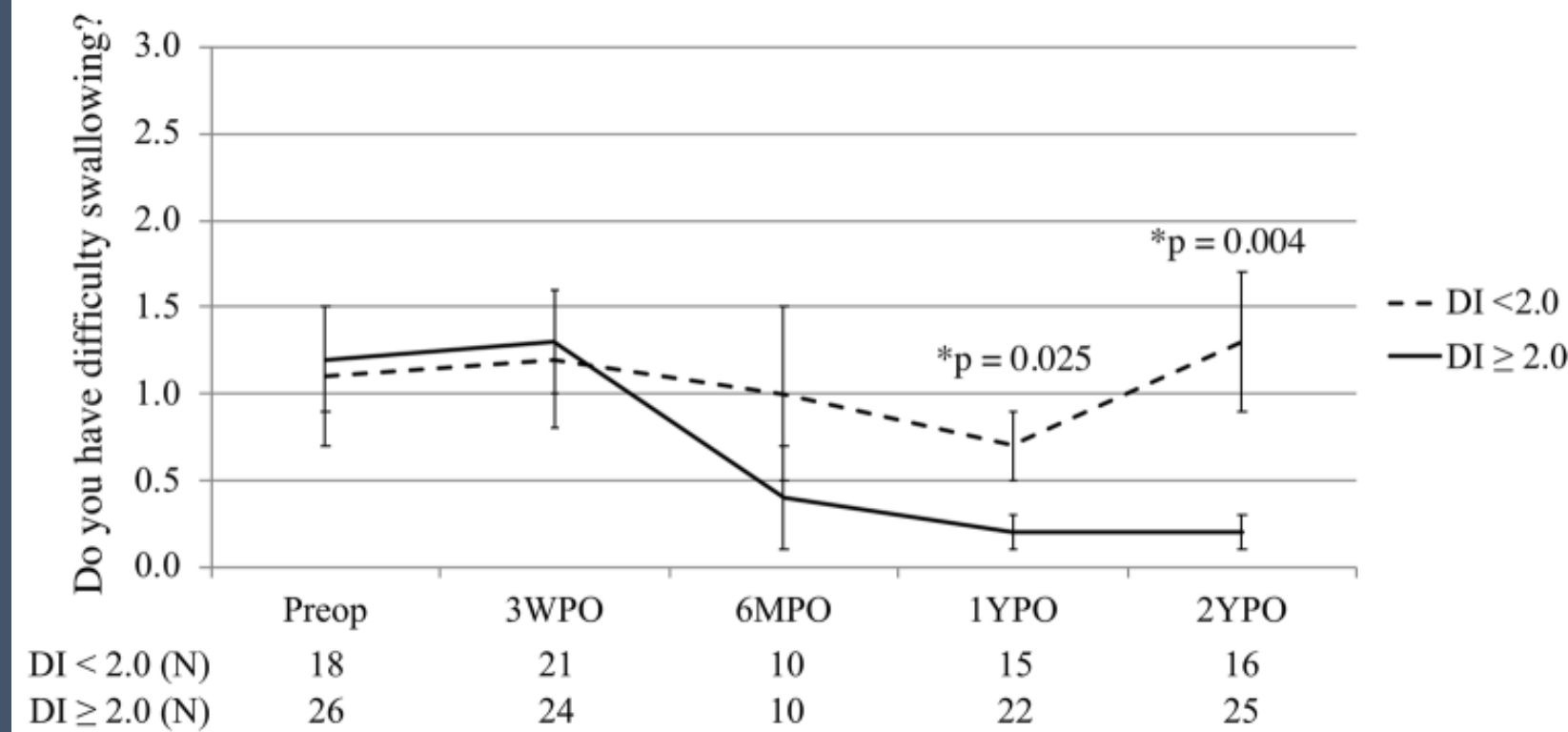
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Our Data

	N = 11
Age	54 ± 18
BMI	26 ± 6
Sex	
Female	6 (55%)
Male	5 (45%)
HH Type	
I	8 (73%)
II	1 (9%)
III	2 (18%)
Redo	1 (9%)
PPI	10 (91%)
OR time	157 [126-199]
Mesh Used	3 (27%)
Fundoplication	
Toupet (2)	8 (73%)
Dor (3)	1 (9%)
None (4)	2 (18%)
Gastropexy	6 (55%)
EBL	10 [10-15]
Pre op GERD	25 [22-30]

DI After hiatal dissection	
at 40	5.2 [1.13 – 6]
At 50	4 [1.7 – 5.3]
After hiatal closure	
at 40	4 [1.9-4.5]
At 50	3 [1.9-4]
After fundoplication	
at 40	2.6 [2.1-3]
at 50	2.4 [2-2.5]



Did EndoFlip Change Management?

Did EndoFlip change management? (N=11)	
Yes	4 (36%)
After hiatal closure	
At 40	1.25 [0.67 – 1.85]
At 50	1.3 [0.98 – 1.75]

- 2: No Fundoplication
- 1: Dor Fundoplication
- 1: Revised Fundoplication



Take Home Message

Anti-reflux surgery/hiatal hernia:

1. Reduction of hernia
2. **Crural closure +/- Mesh**
3. **Fundoplication**
4. \pm Gastropexy



1. How tight to close crura (mesh)?
2. How tight/long to make the wrap?
3. Can we forgo fundoplication?

Can we move the needle toward standardized intraoperative evaluation?

Can we do less for patients with similar or improved outcomes?

Can we tailor the operation and predict better outcomes for patients?



Thank You !

