Defining physiological and pathological reflux following sleeve gastrectomy

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CONFLICT OF INTEREST DISCLOSURE

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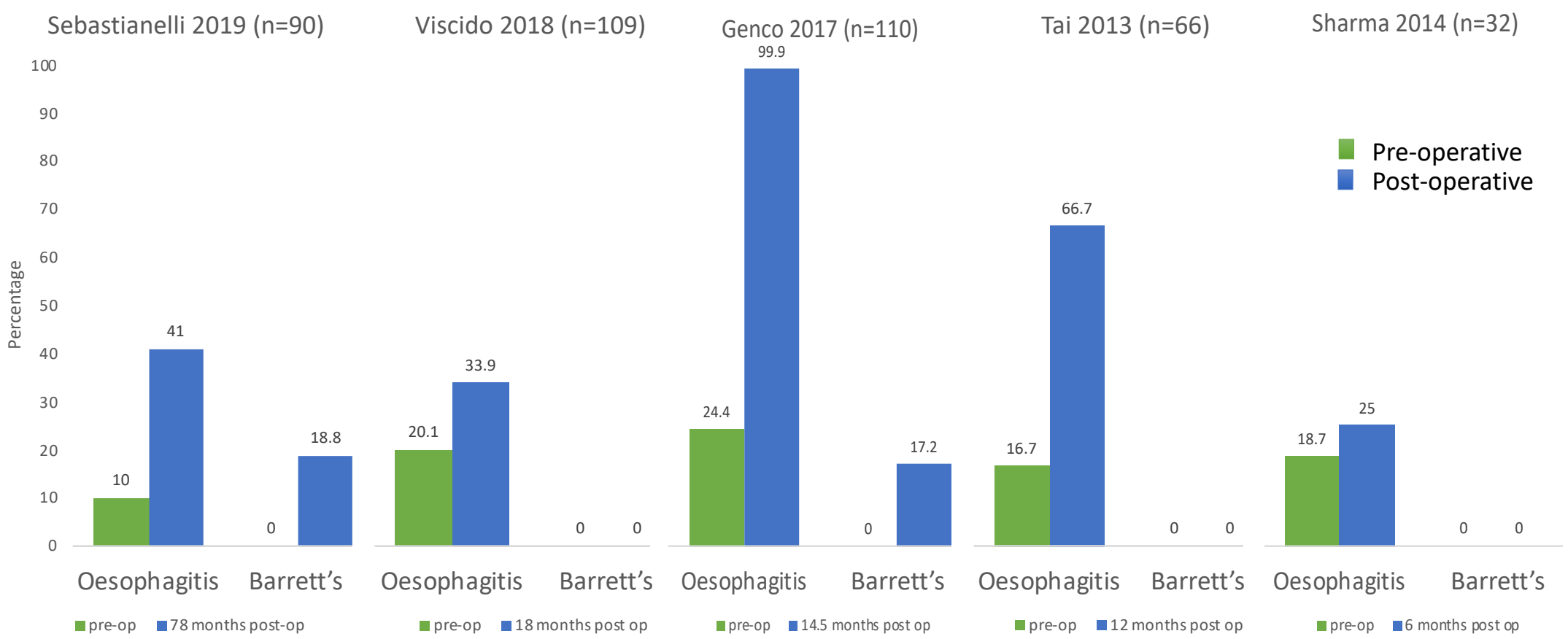
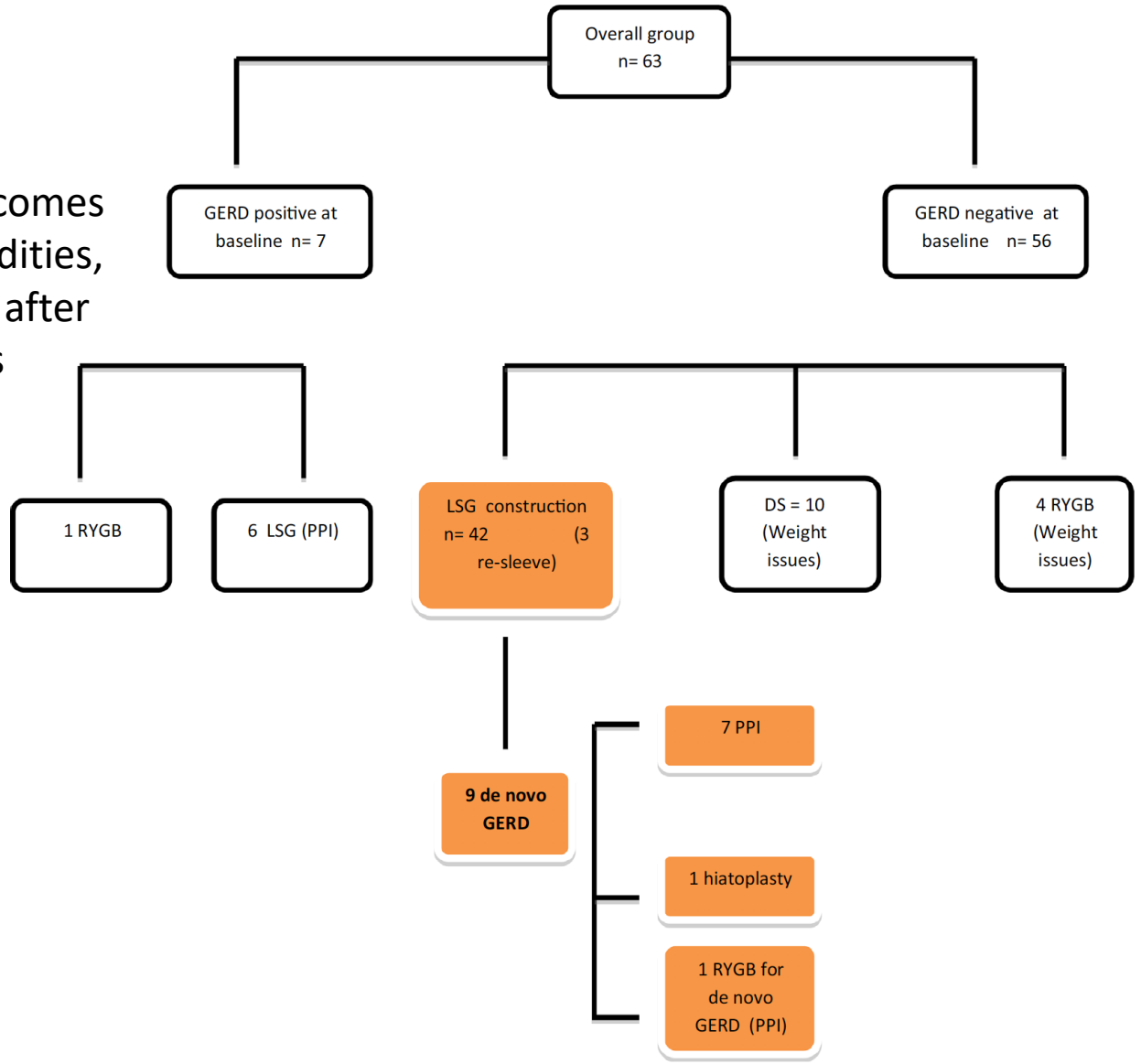
Sleeve and oesophagitis

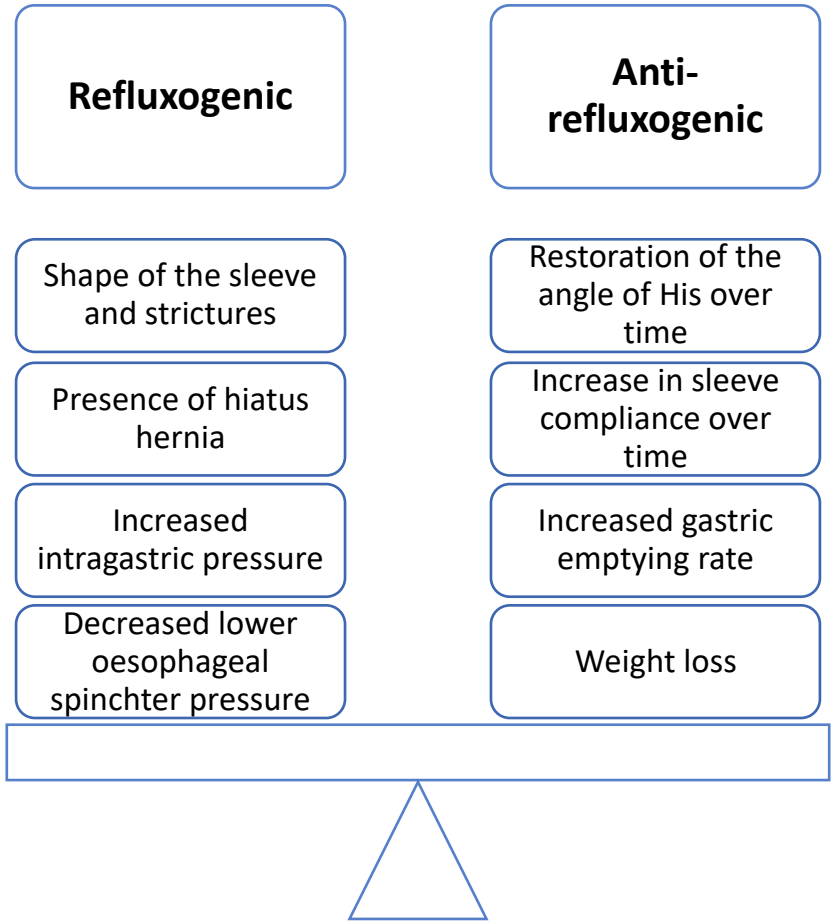


Reflux and reoperation

Arman et al, Long term (11+ years) outcomes in weight, patient satisfaction, comorbidities, and gastroesophageal reflux treatment after sleeve gastrectomy, Surg Obes Relat Dis 2016:12; 1778-1786



Refluxogenic vs Anti-refluxogenic?

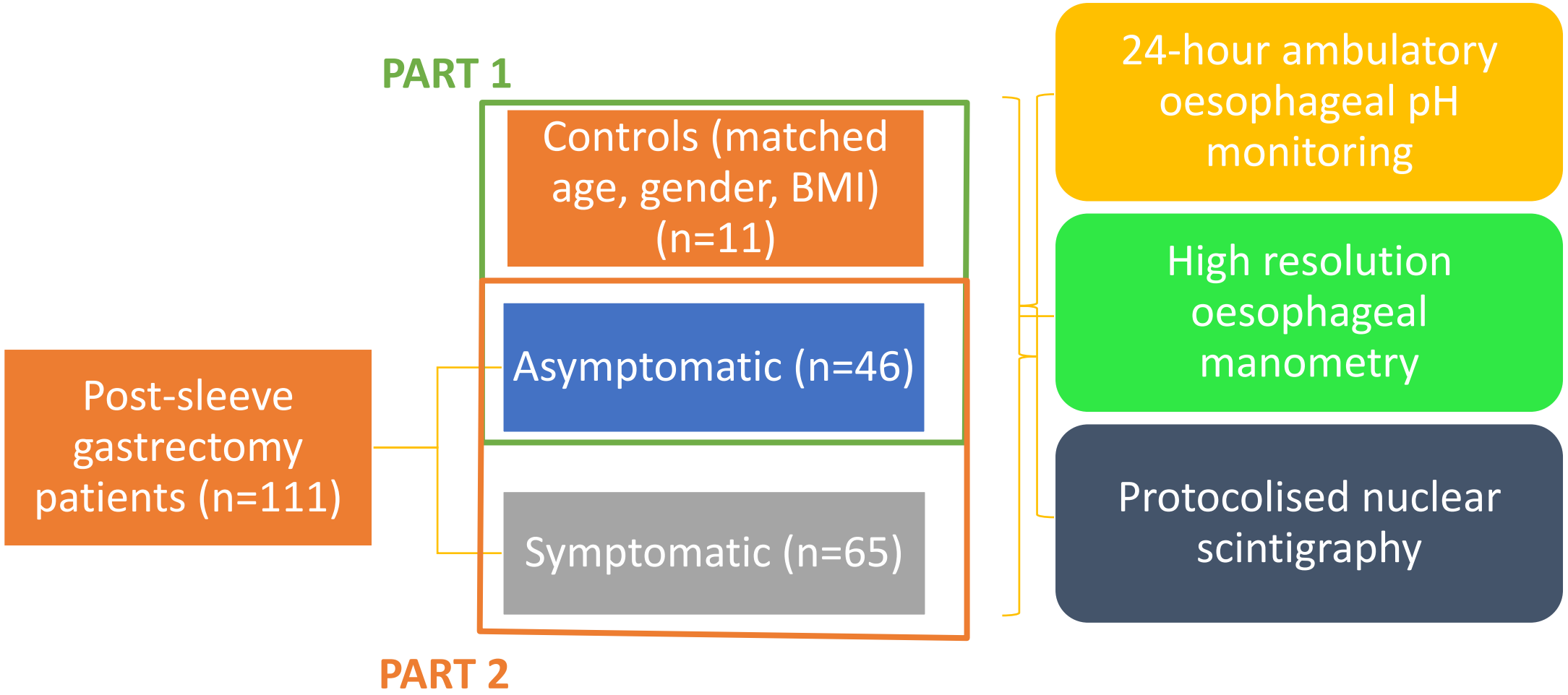


Aims

- To describe **normal and abnormal physiology** of reflux in sleeve gastrectomy patients.
- To define **diagnostic thresholds** for abnormal reflux.

Methods

This is a prospective cohort study to assess the physiology of reflux in sleeve gastrectomy patients and correlation with gastrointestinal symptoms and quality of life



Background demographics

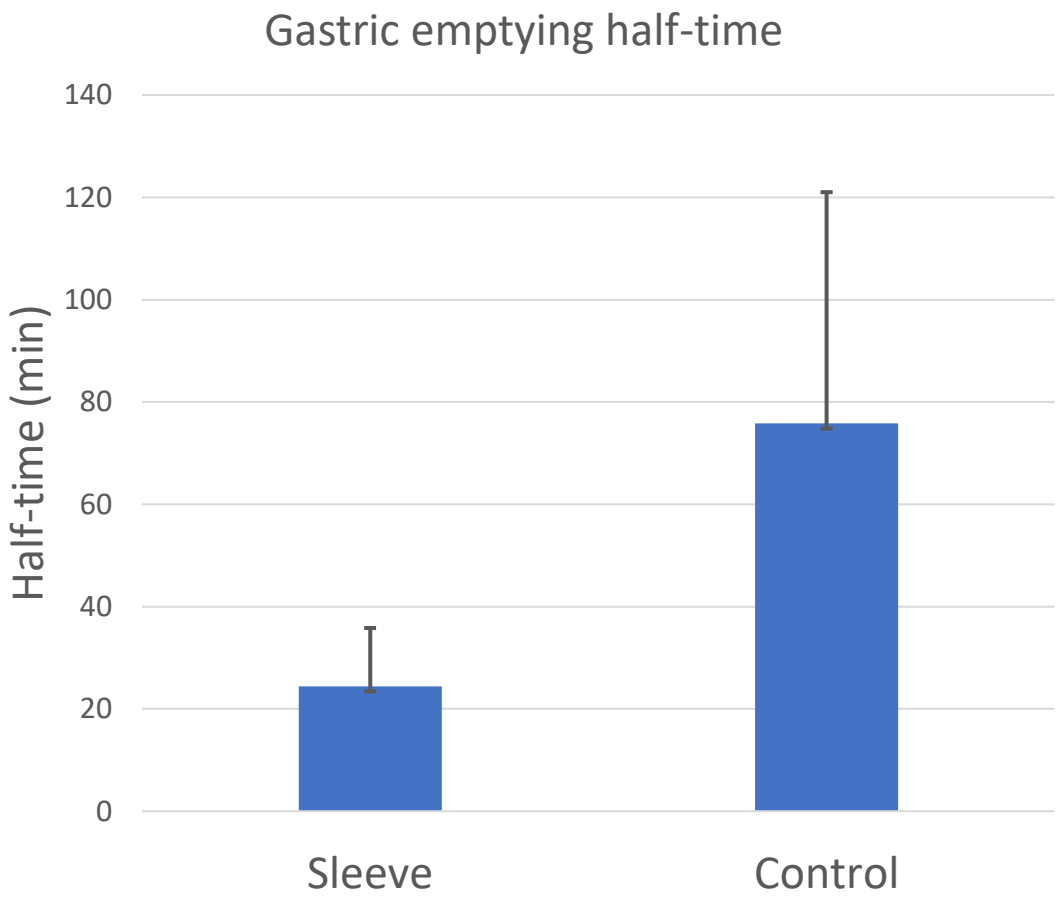
	Asymptomatic	Symptomatic	*p-value*
N	46	65	
Age (years)	47.2 ±11.6	44.1 ± 11.3	*0.121*
Female gender	73.2%	90.8%	*0.051*
Pre-operative weight (kg)	131.5 ± 22.9	125.9 ± 23.6	*0.220*
Pre-operative BMI (kg/m^2)	47.2 ± 7.1	45.4 ± 7.9	*0.217*
Excess weight loss (%)	53.8 ±28.1	57.4 ± 25.5	*0.422*
Revisional surgery	9 (20.0%)	12 (18.8%)	*0.871*
Post-operative time	*12* months		

Part 1

Defining physiology

Asymptomatic post sleeve patients vs matched controls

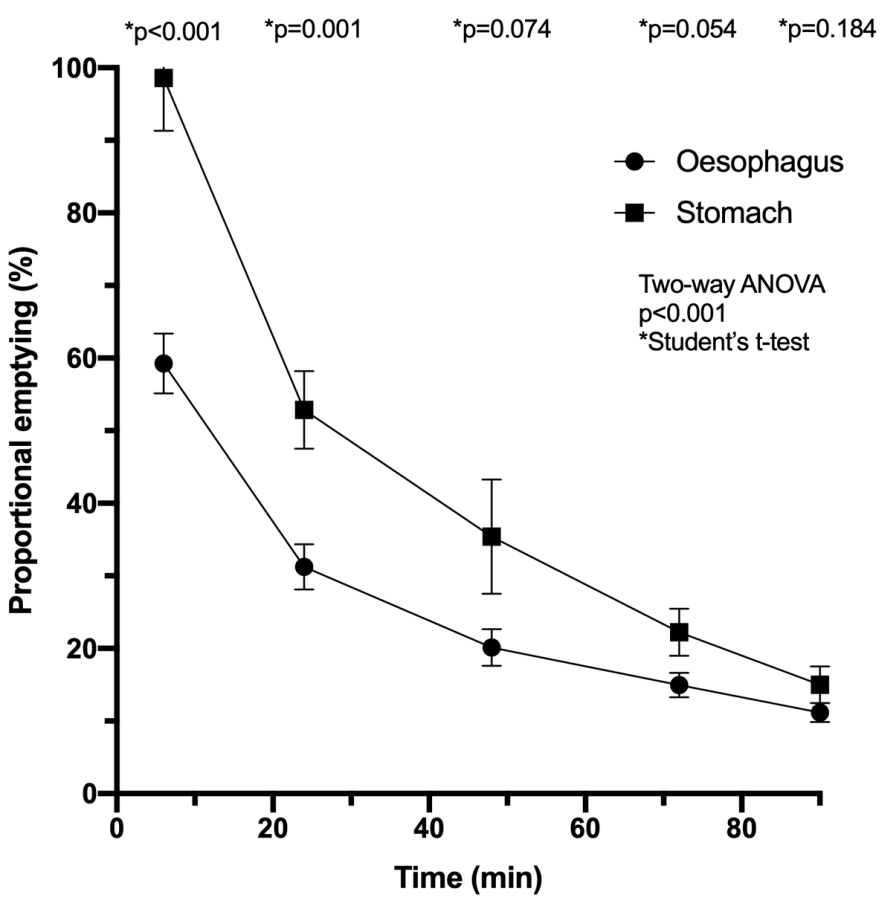
Nuclear scintigraphy – **Gastric transit**



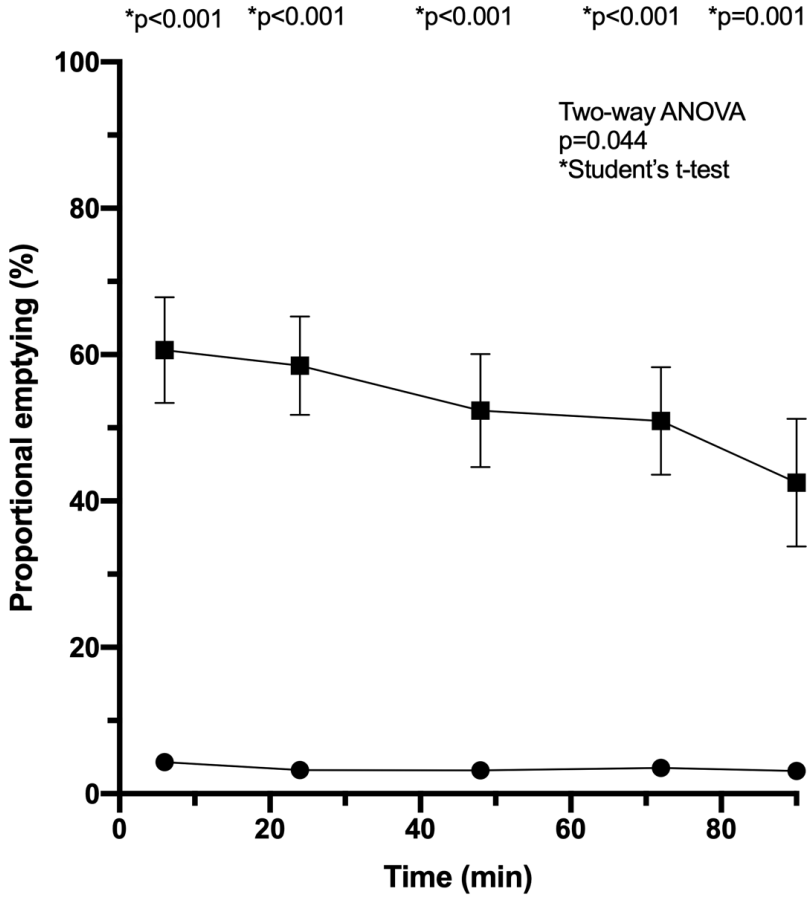
p<0.001

Nuclear scintigraphy – **Proportional emptying**

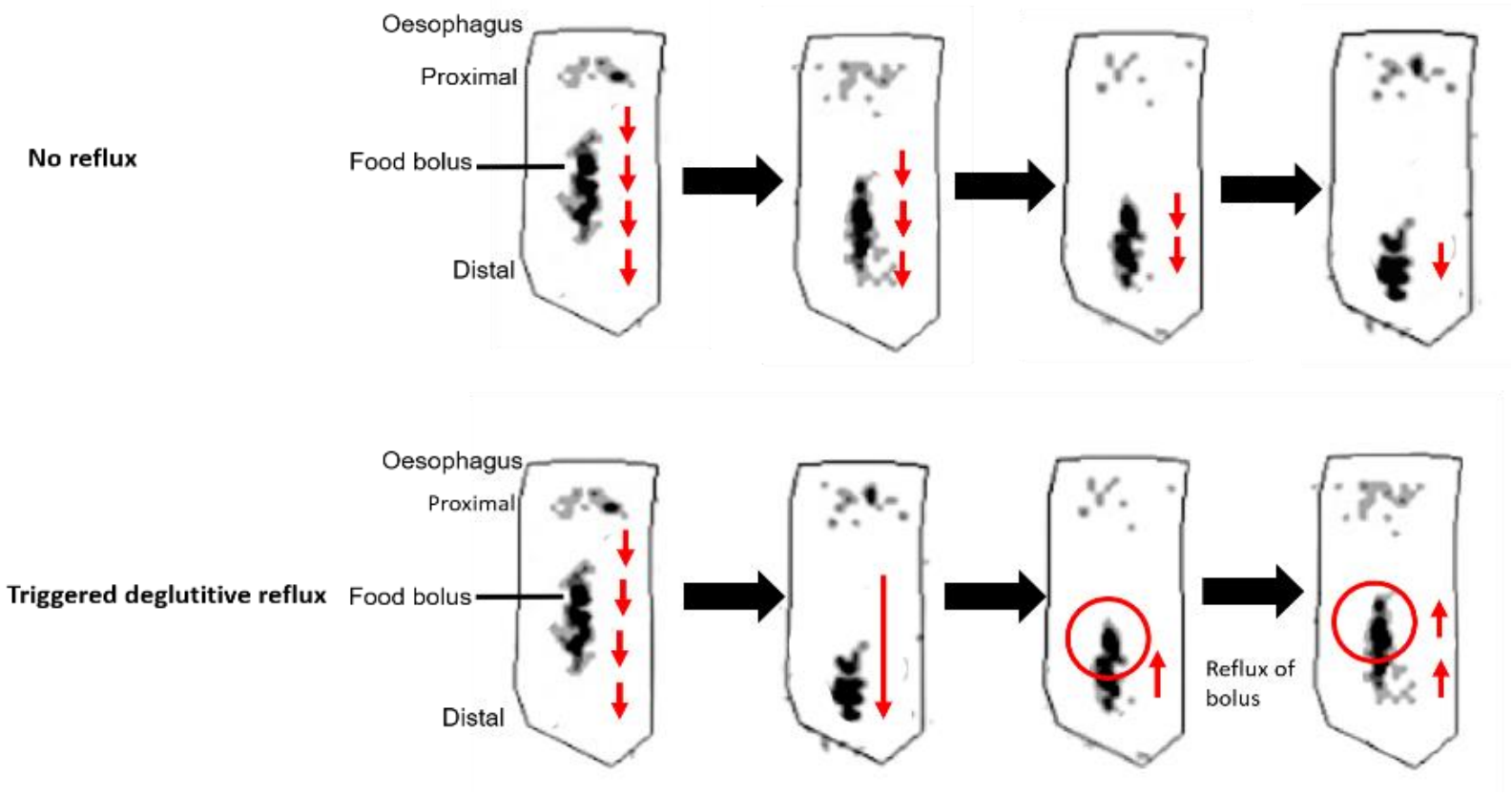
Sleeve

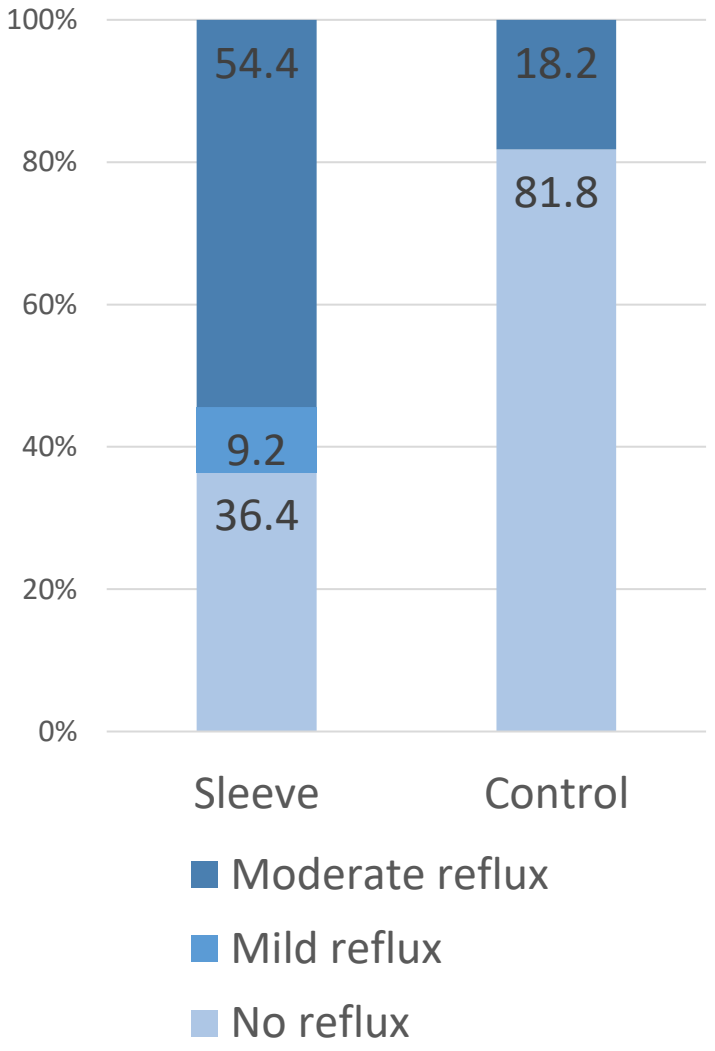


Control



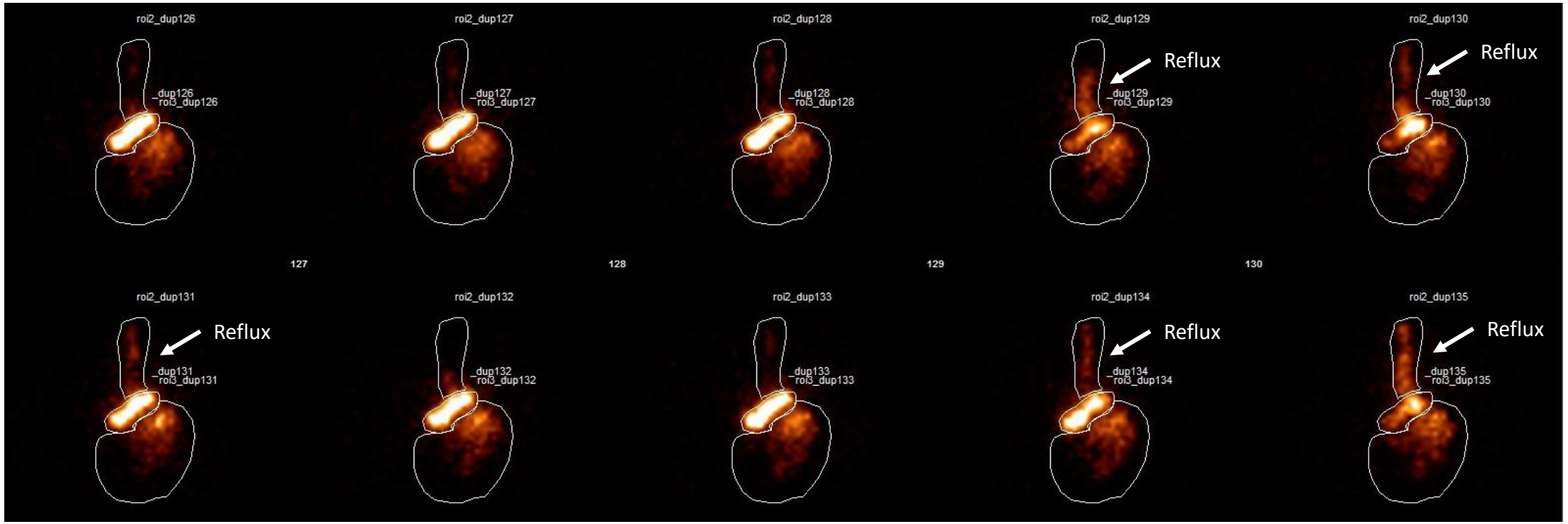
Nuclear scintigraphy - **Oesophageal transit within 60 seconds**





p=0.017

Nuclear scintigraphy – **Post-prandial reflux within 60 minutes**



5 sec per frame

Stationery manometry – **Baseline data**

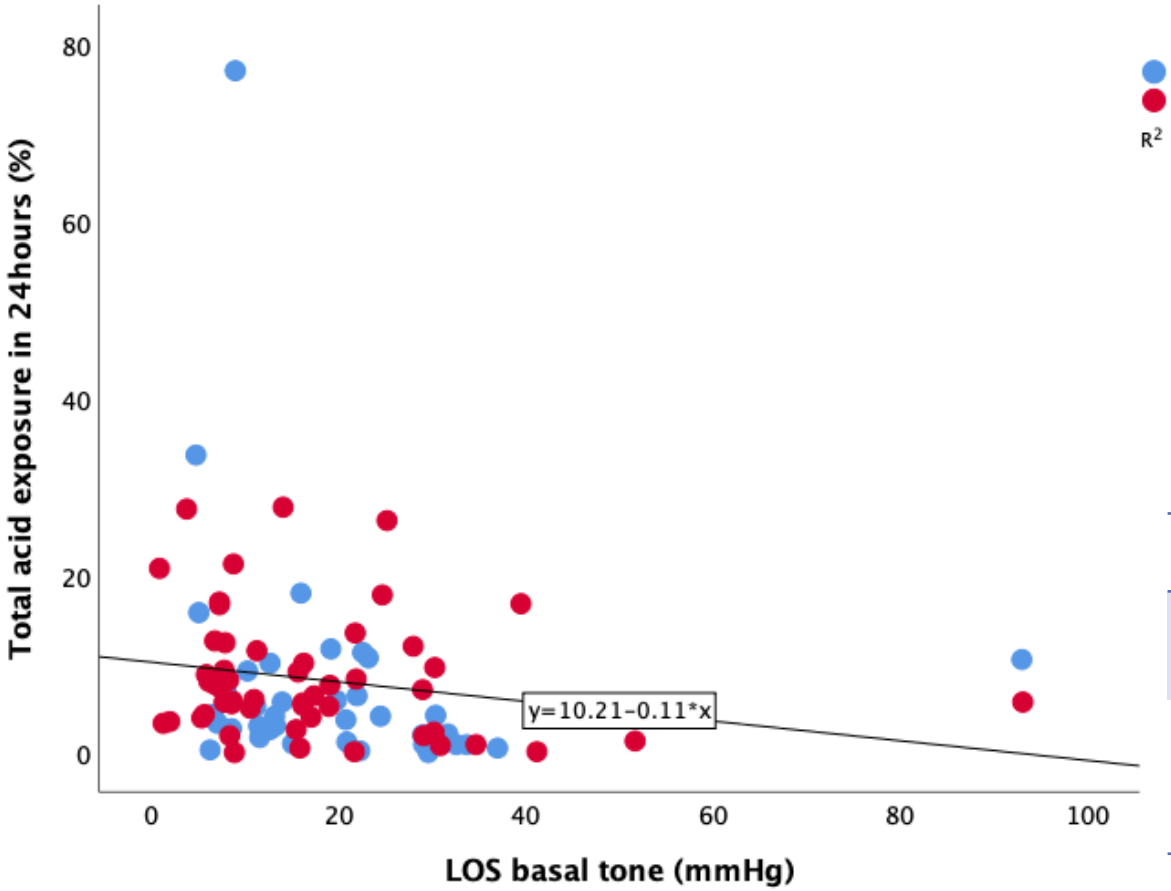
LOS relaxation, median (IQR), %	61.3 (35.7)
LOS basal tone, median (IQR), mmHg	12.6 (14.1)
Hypotensive LOS basal tone < 10mmHg, N (%)	10 (38.5)
Axial separation of LOS and diaphragm, N (%)	13 (50.0)
Size of separation of LOS and diaphragm, median (IQR), cm	3.0 (1.1)
Axial separation of LOS and diaphragm ≥ 4cm, N (%)	4 (15.3)
Normal peristalsis, N (%)	13 (50.0)
Impaired peristalsis, N (%)	13 (50.0)
Motility disorder, N (%)	0

Part 2

Defining pathophysiology

Asymptomatic vs symptomatic post sleeve gastrectomy

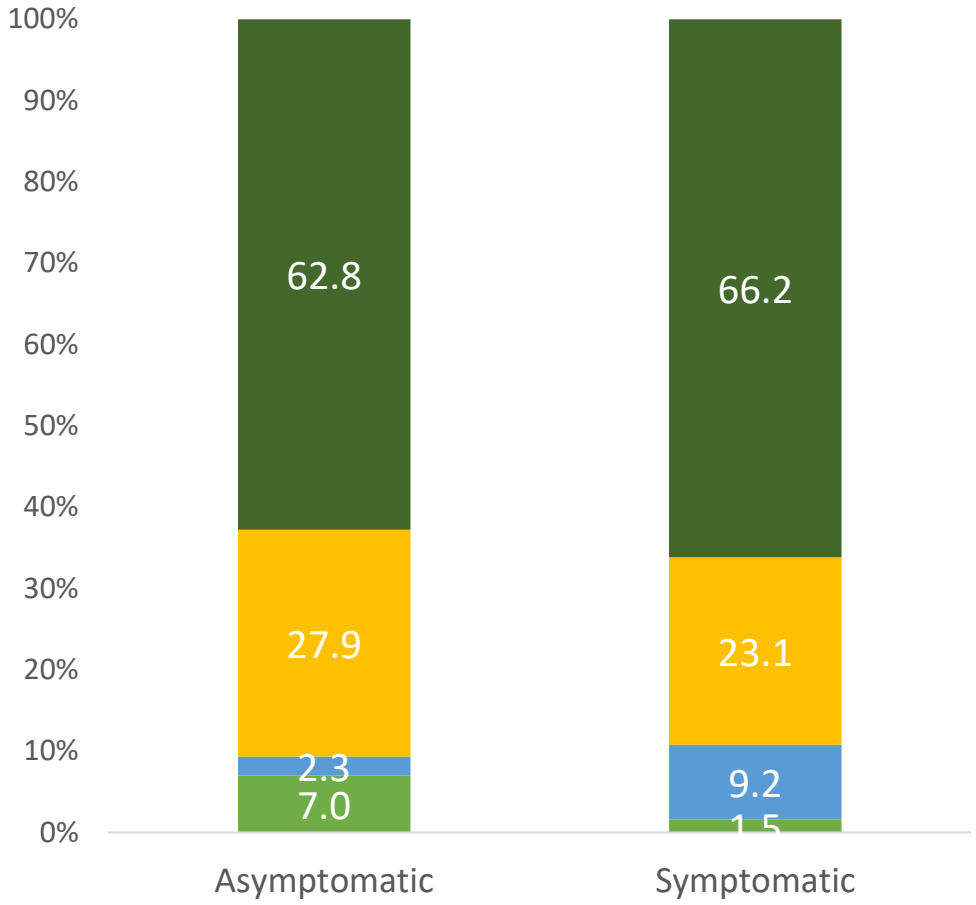
LOS basal tone



p=0.107

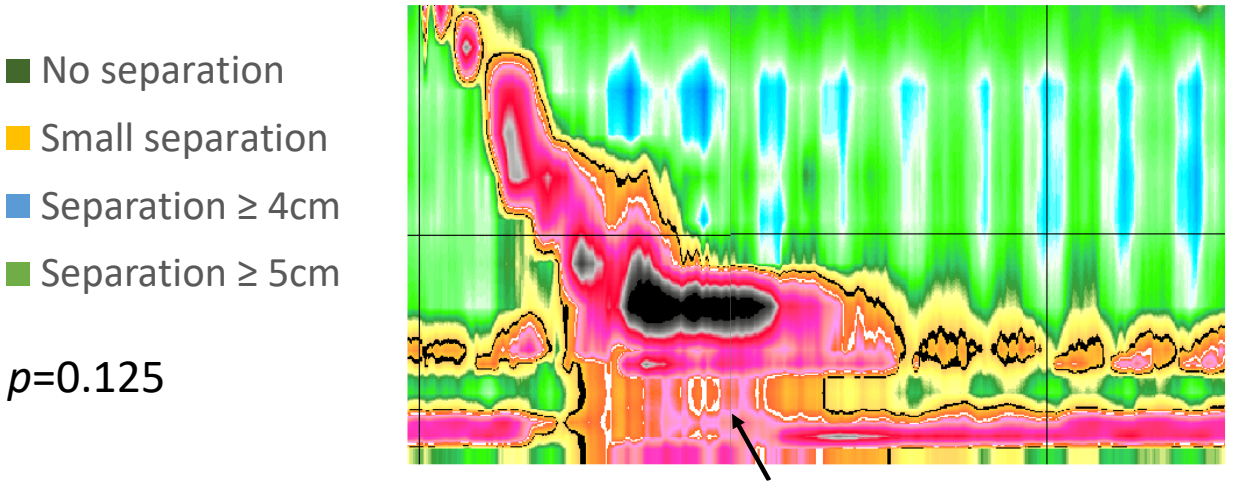
	Asymptomatic	Symptomatic	p-value
Median LOS basal tone (mmHg)	17.6 (IQR 18.3)	12.7 (IQR 14.4)	0.051
Patients with hypotensive resting LOS (<10mmHg)	5 (10.9%)	10 (15.6%)	0.473

Axial separation of LOS and diaphragm



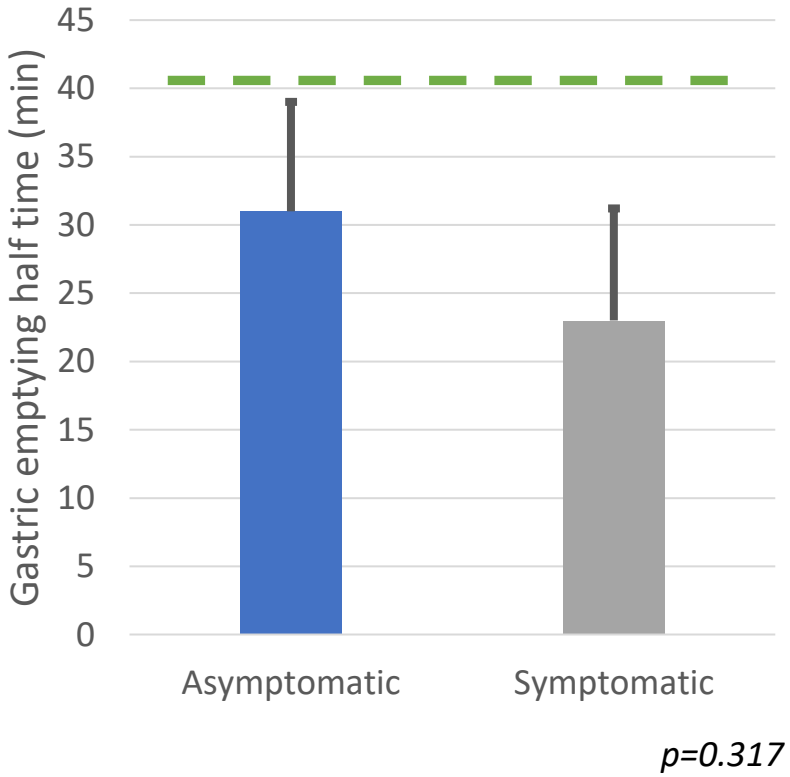
	Asymptomatic	Symptomatic	p-value
Size of axial separation (cm)	3.5 (IQR 1.8)	3.5 (IQR 1.0)	0.805

*≥5cm is considered large hiatus hernias by manometric criteria

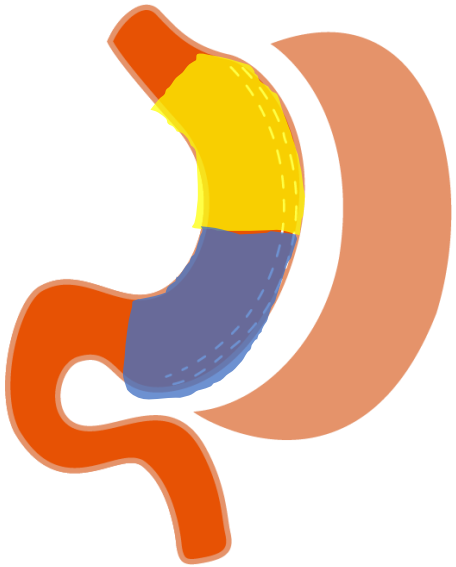


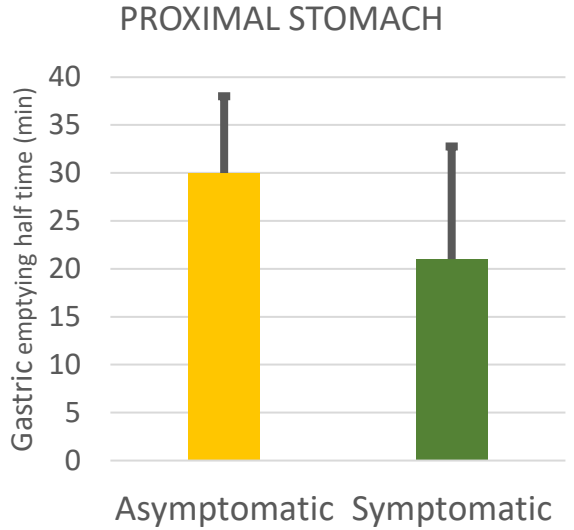
p=0.125

Gastric emptying half time



p=0.317





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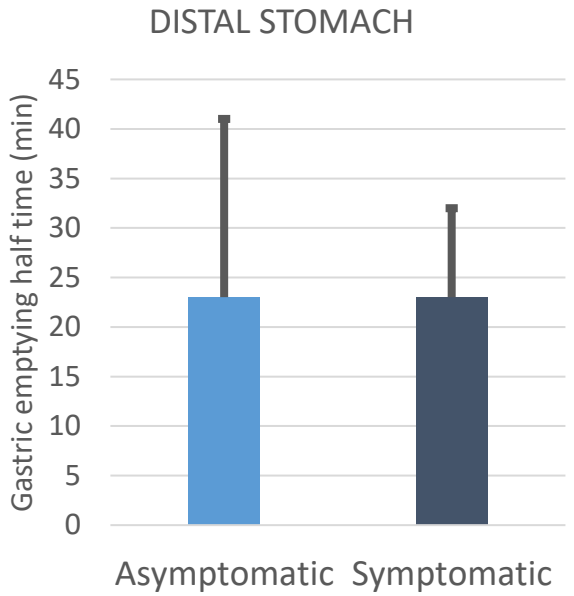
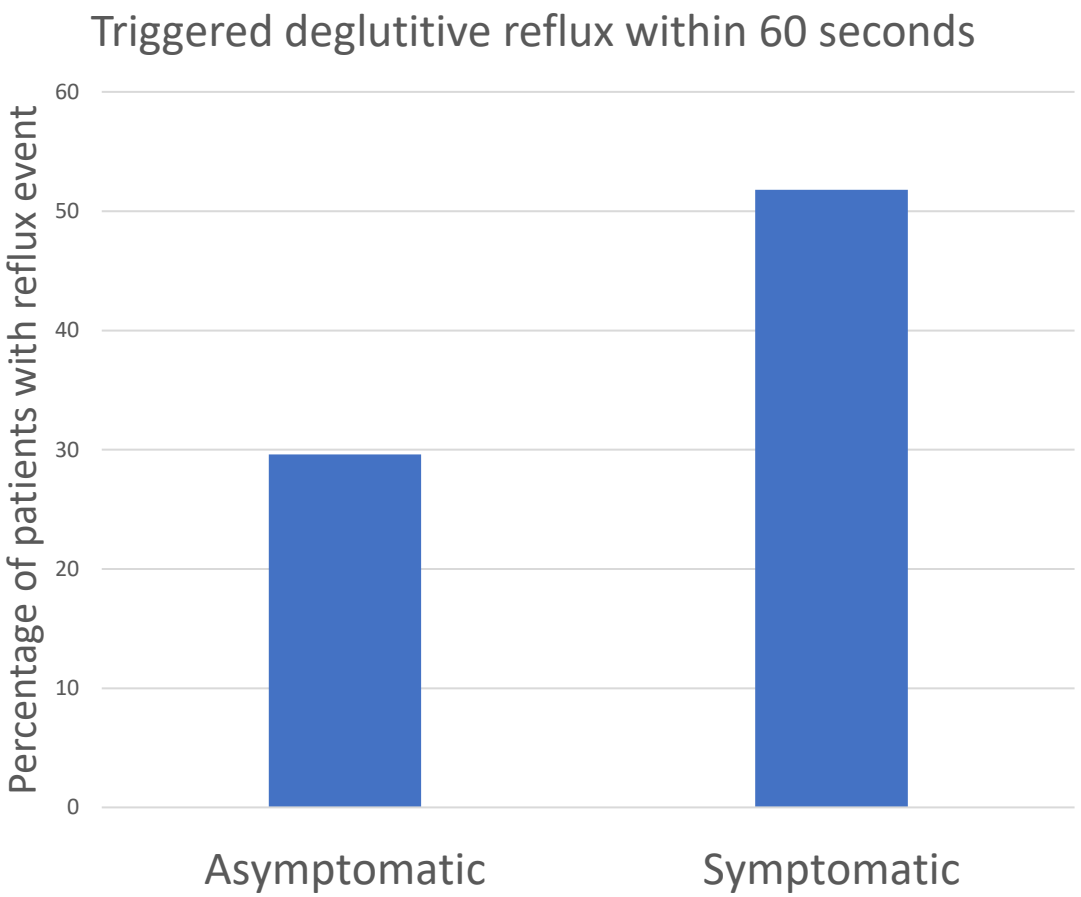
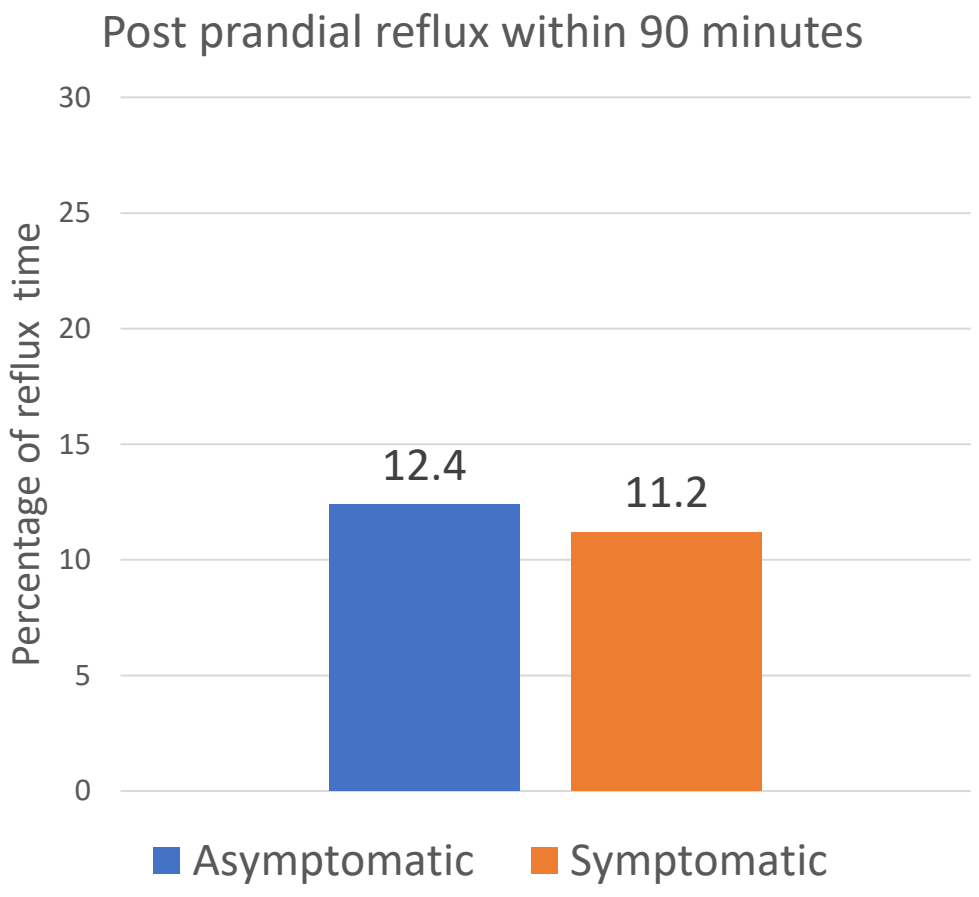


p=0.399

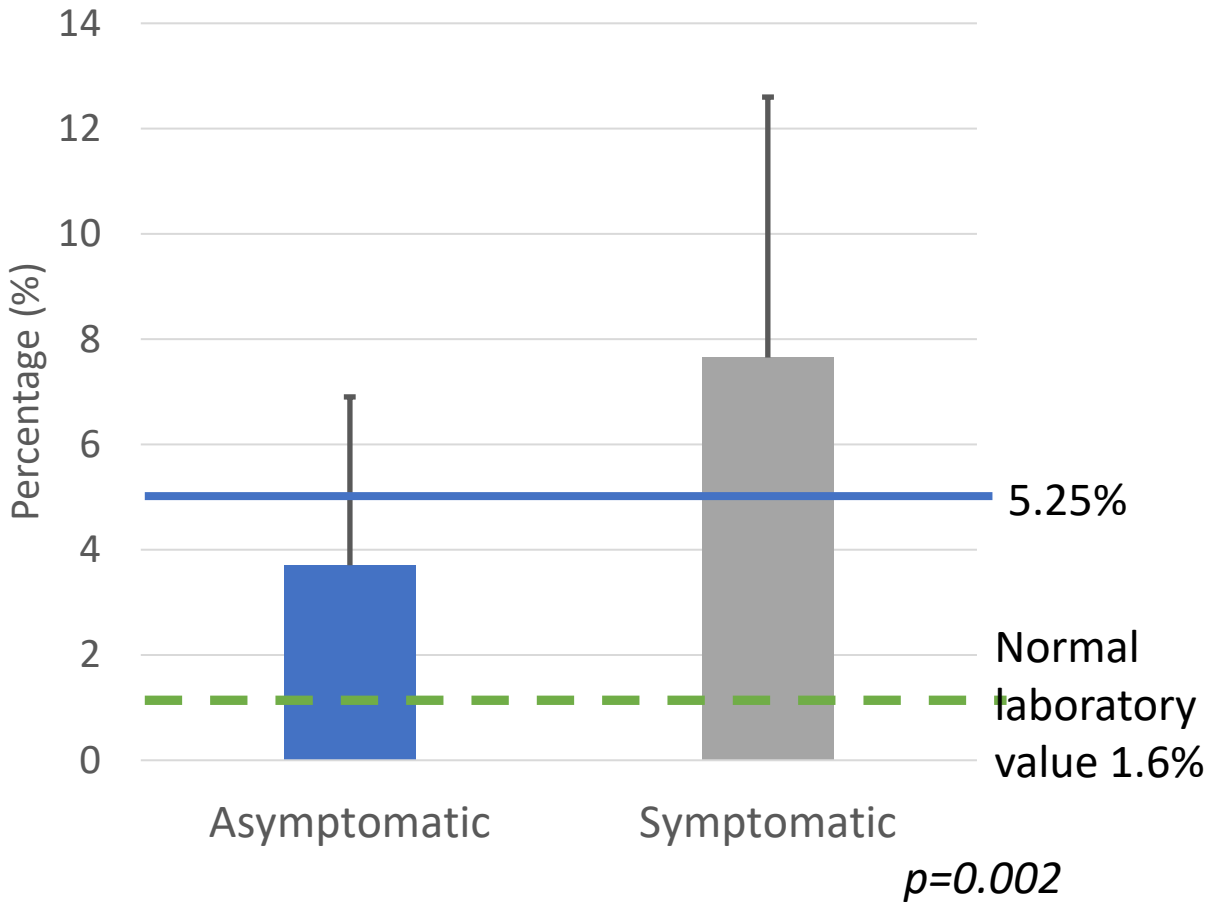
Reflux events on nuclear medicine scan with semi solid swallow

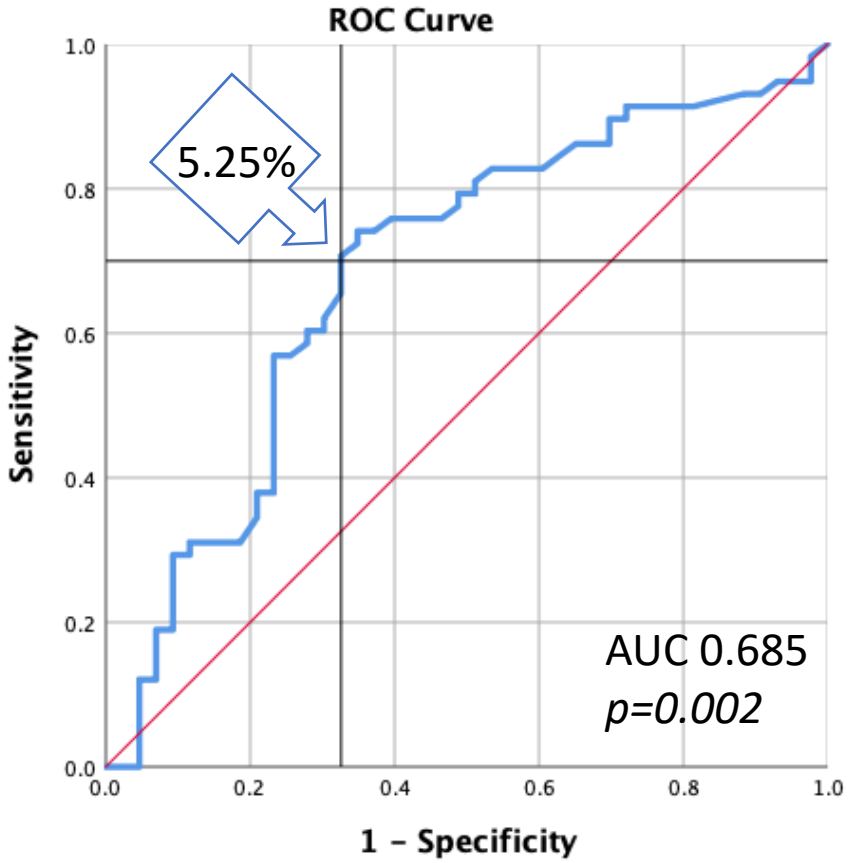


P=0.005

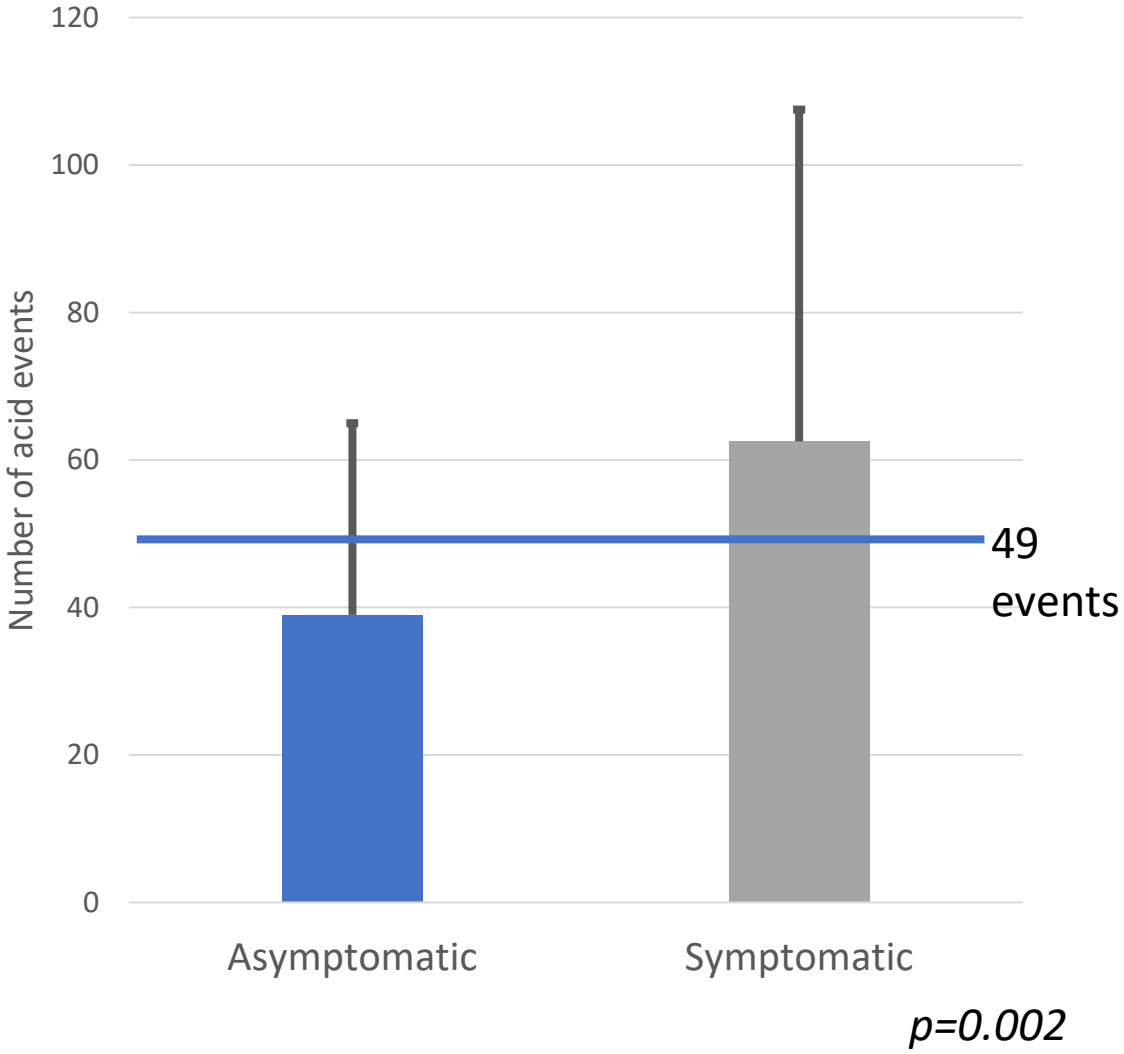


Total acid exposure in 24 hours





Number of acid events in 24 hours



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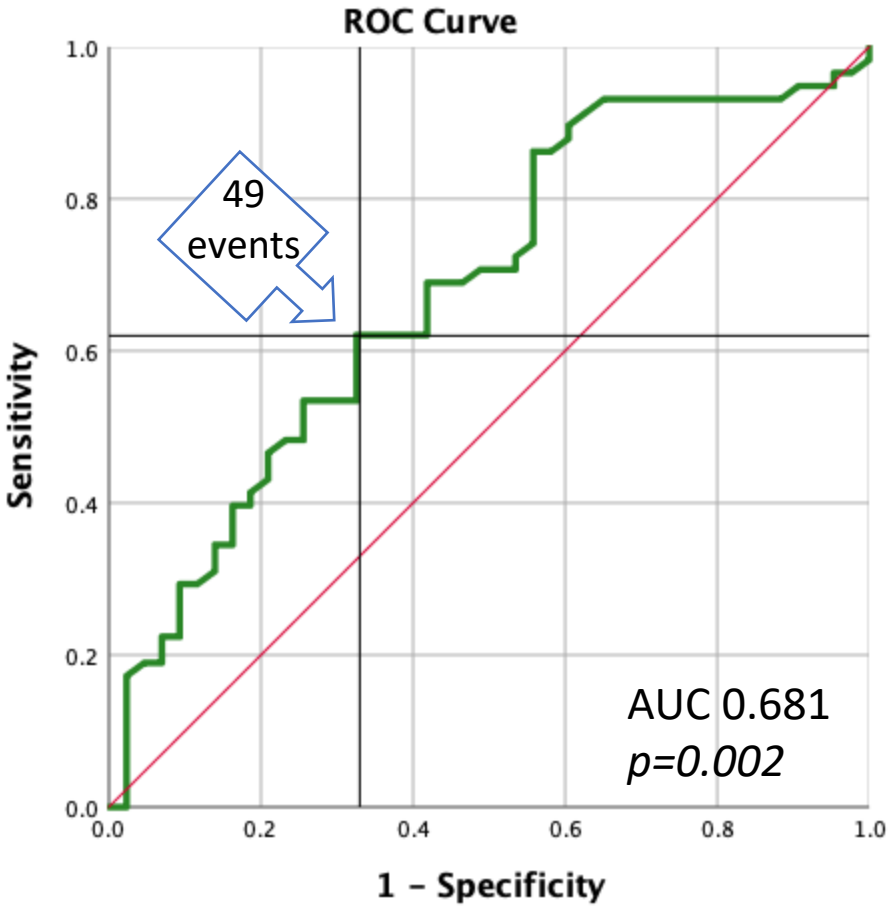
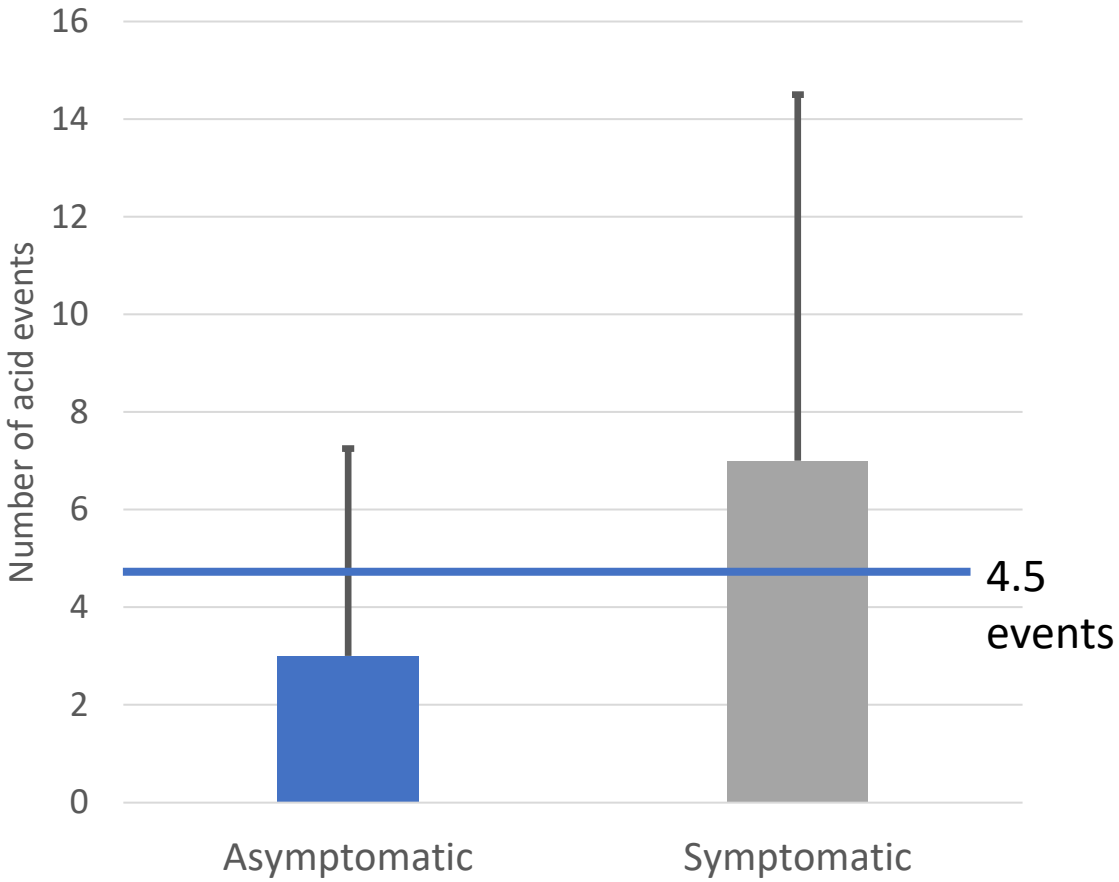


Supine reflux events



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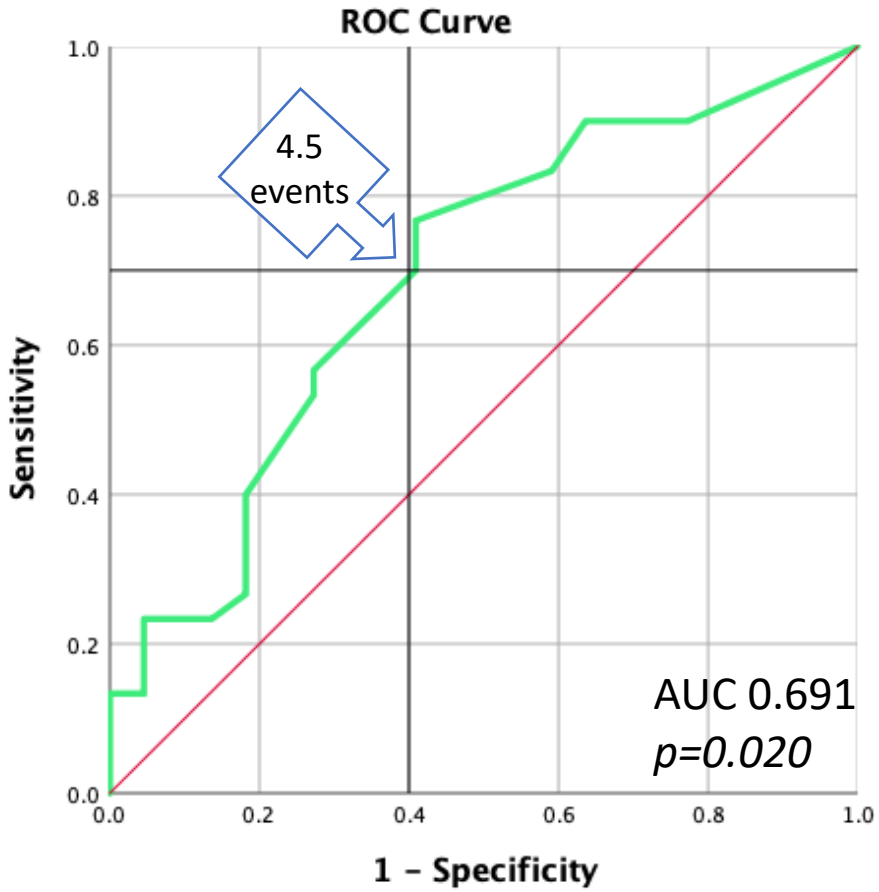

Conclusions

- We have **established normative values** and determined the **expected pattern** of oesophageal and gastric transit following sleeve gastrectomy
- The oesophageal mediated peristaltic contractions and reflux are ubiquitous to the procedure.
- Elevated oesophageal acid exposure and higher reflux events on pH study and nuclear scintigraphy were key pathological features that can be used to determine further intervention of reflux post sleeve gastrectomy.

Future endeavors

- Ongoing endeavours to utilise these data and understanding of function to systematically investigate adverse symptoms and weight regain are important.
- *In particular, we need to better understand normal and abnormal reflux and develop clinically useful diagnostic tests to aid in management decision making.*

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