

# Weight Recurrence in Bypass

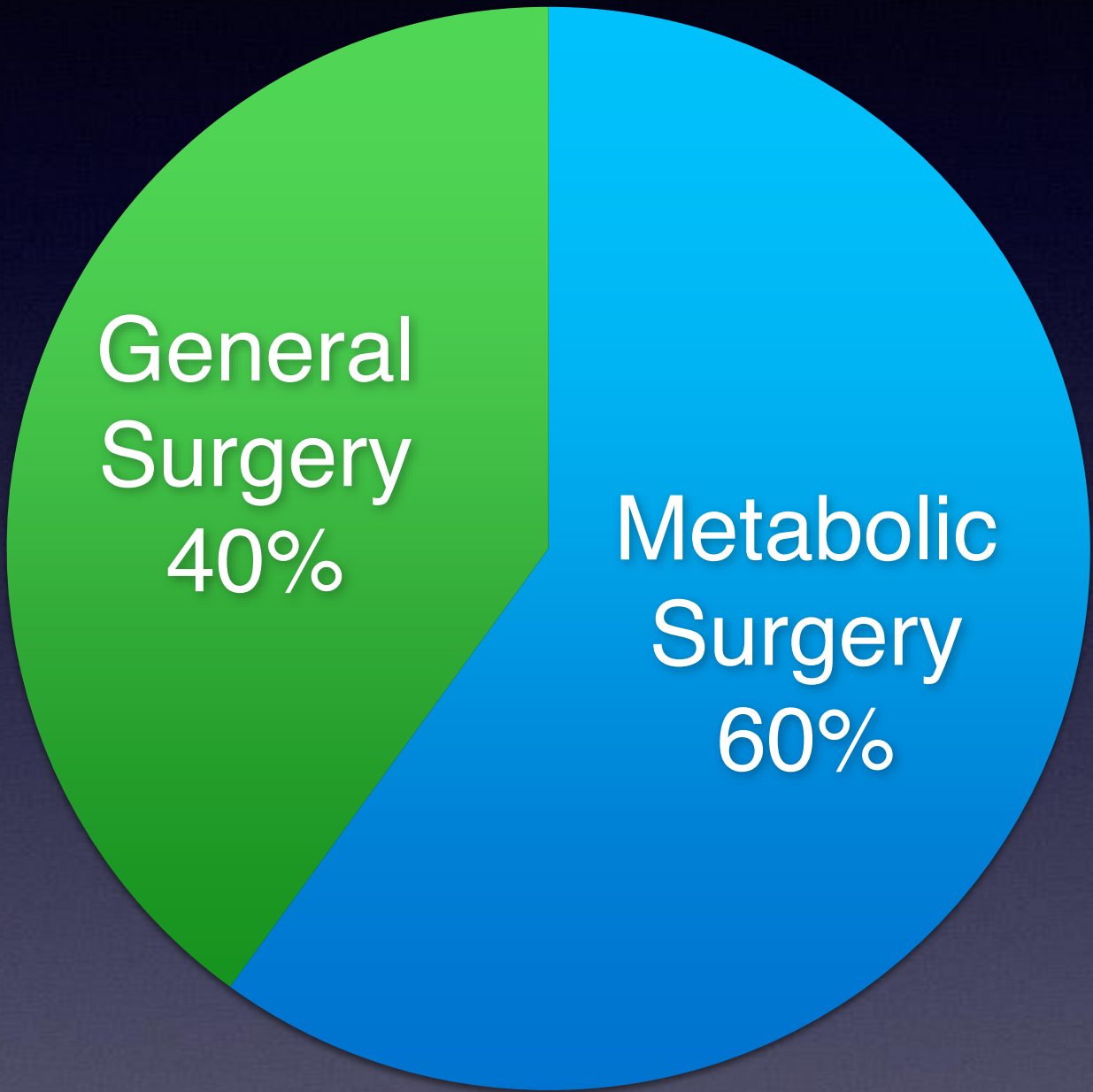
What is the best approach?

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Clinical Professor of Surgery, UCSF  
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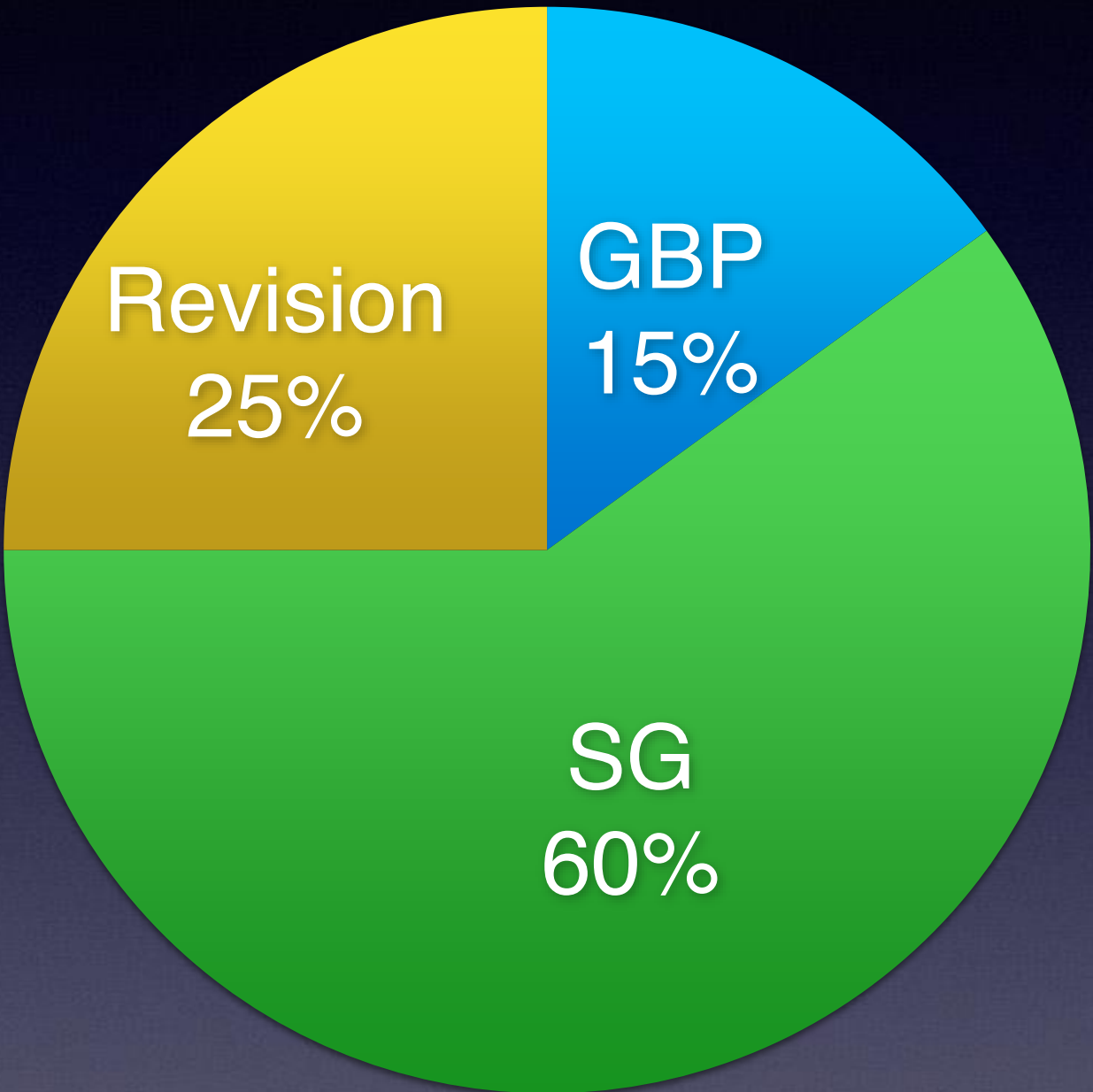


# Disclosure: Ethicon

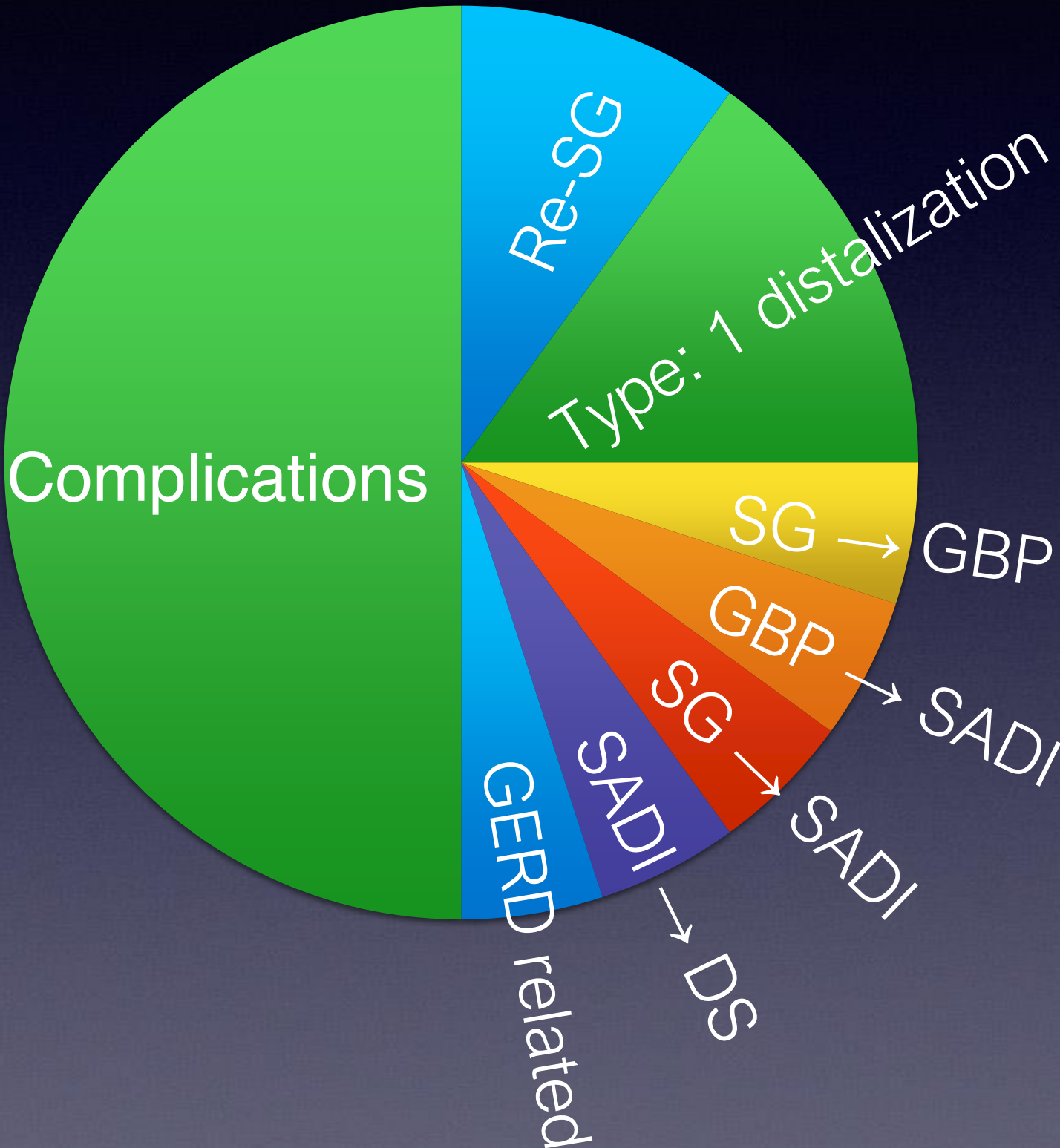
Practice



Metabolic Surgery

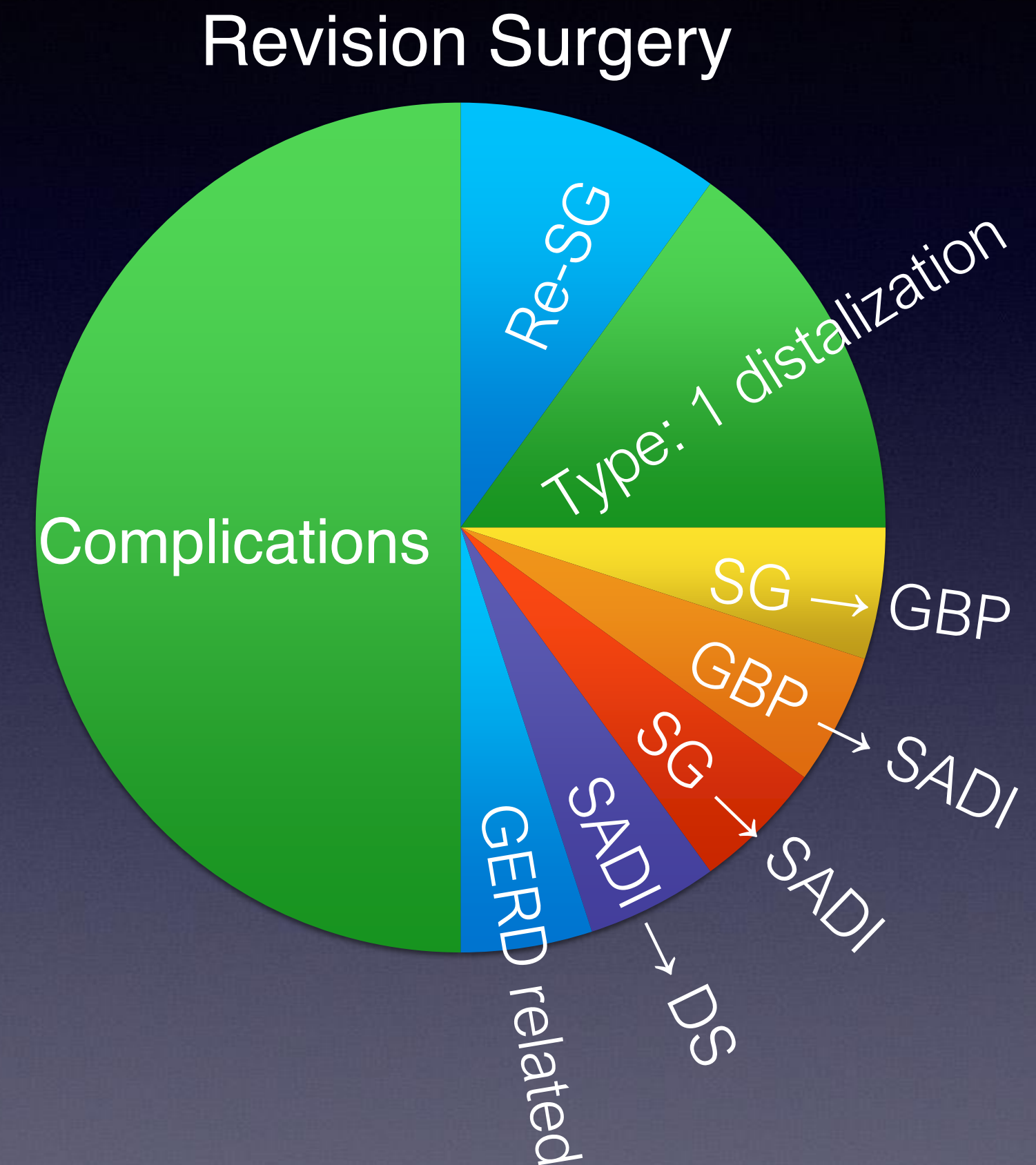


Revision Surgery



# What is the best approach?

- IDK
- The wrong approach:
  - Chase maximal weight loss at the expense of health
  - Blame patients for “non-compliance”
- Our goal should always be to maximize health and QOL
- Accept our limitations



Every Patient is an Experiment.



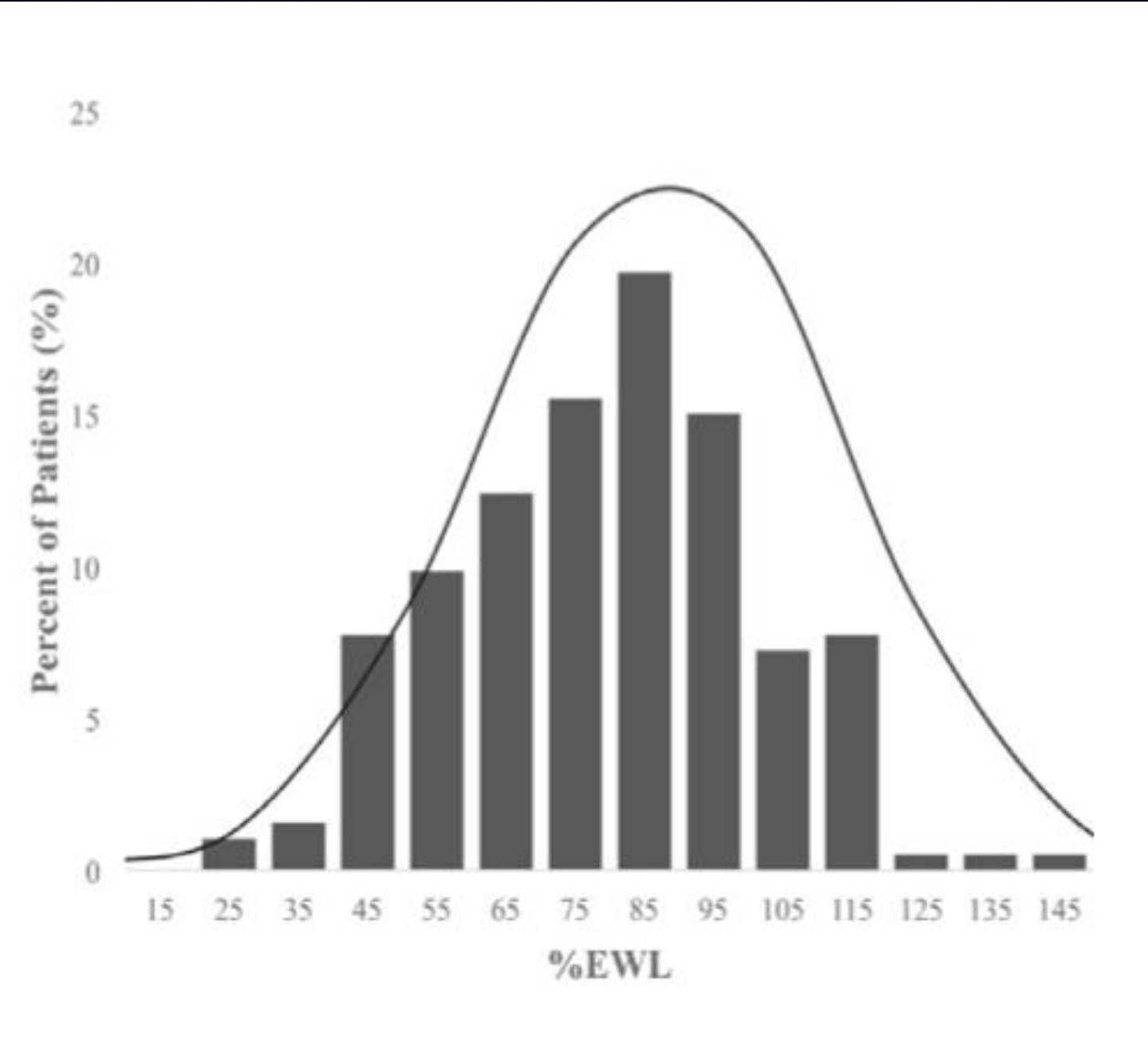
Fresno Medical Education Program

Advanced Laparoscopic Surgery Associates Medical Group

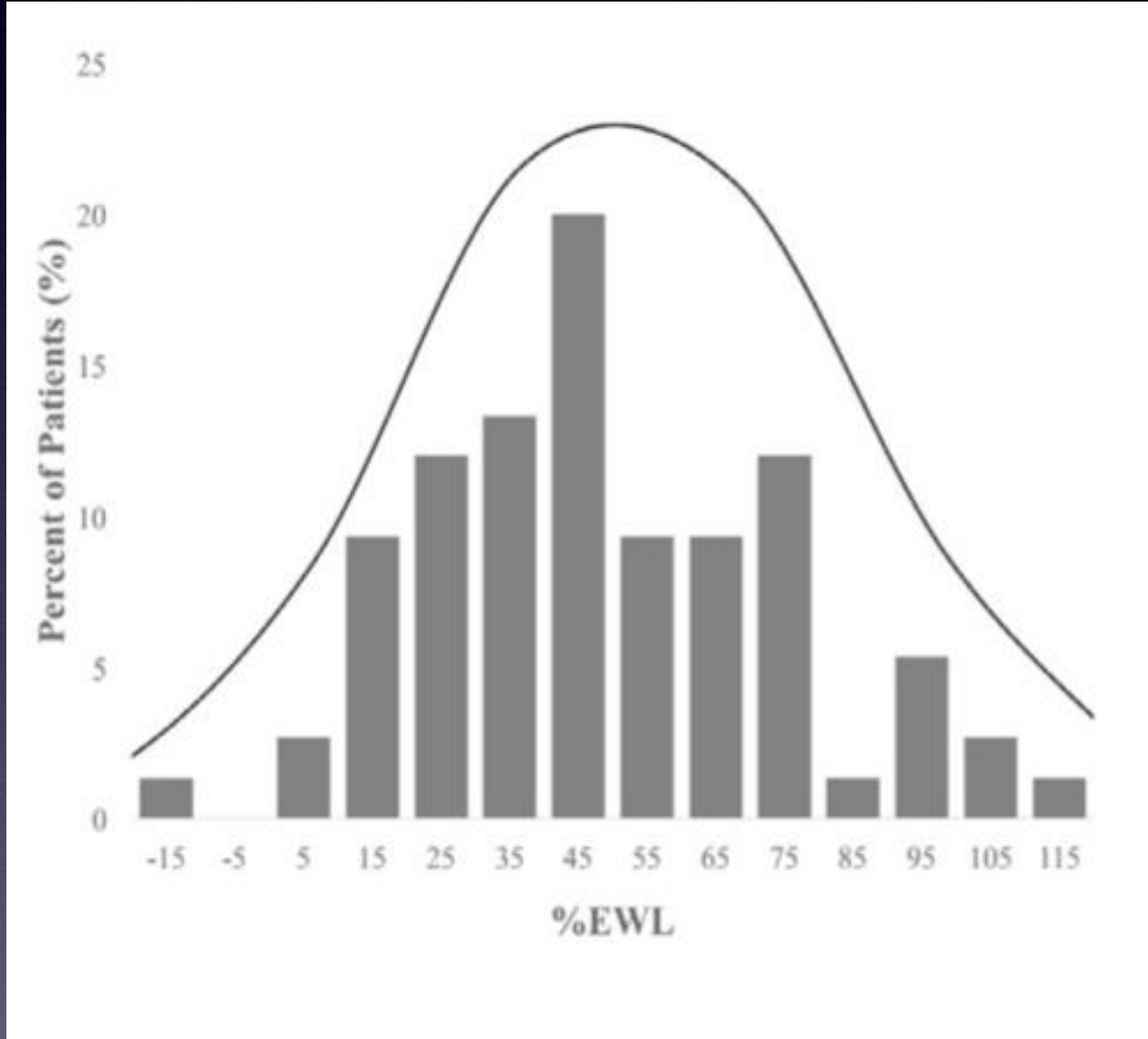
# Heterogeneity of weight loss after gastric bypass, sleeve gastrectomy, and adjustable gastric banding.

Azagury D, Mokhtari T, Garcia L, et al. Surgery 2019

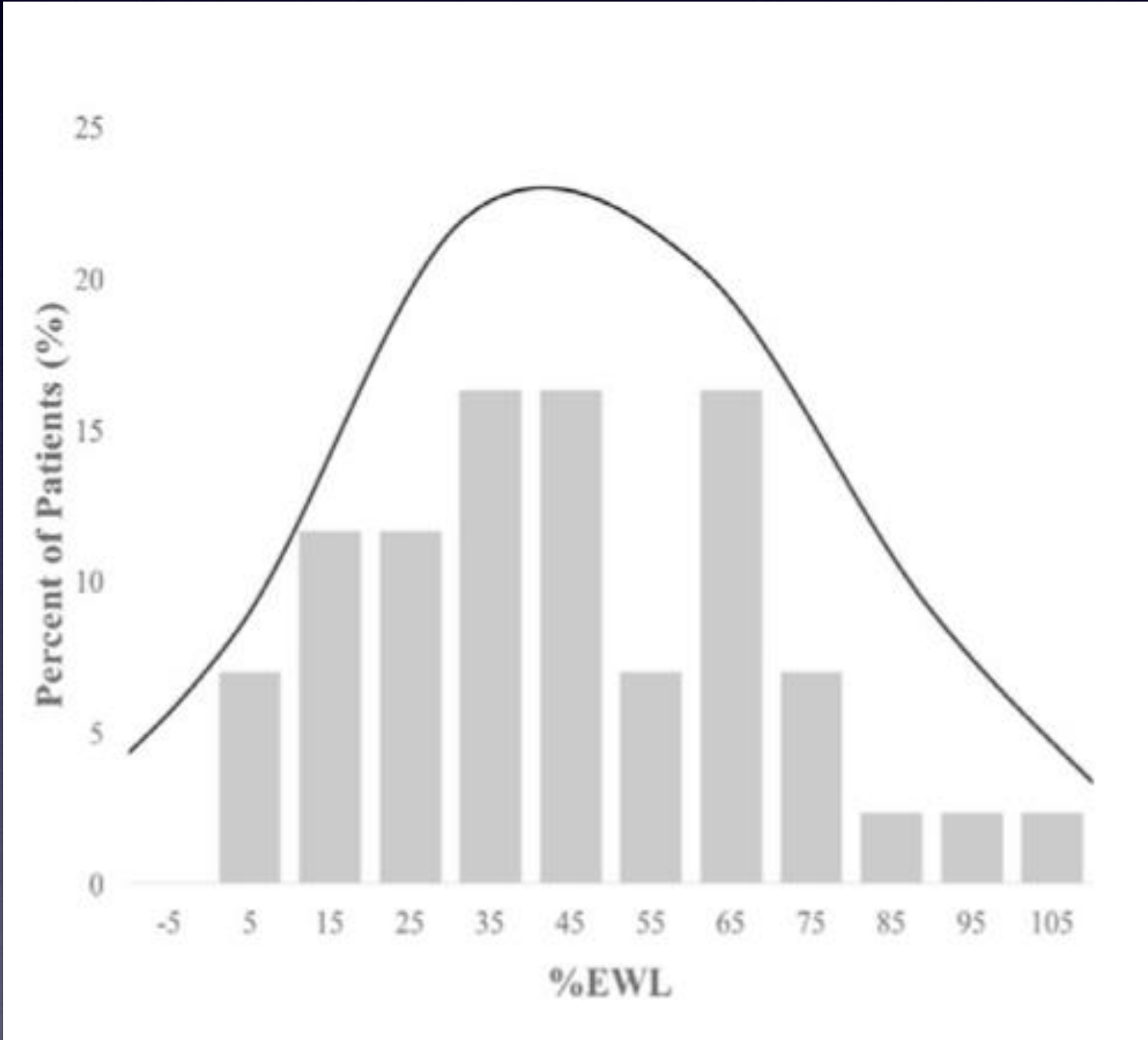
## Gastric Bypass



## Sleeve



## Gastric Band



%EWL @ 3 years

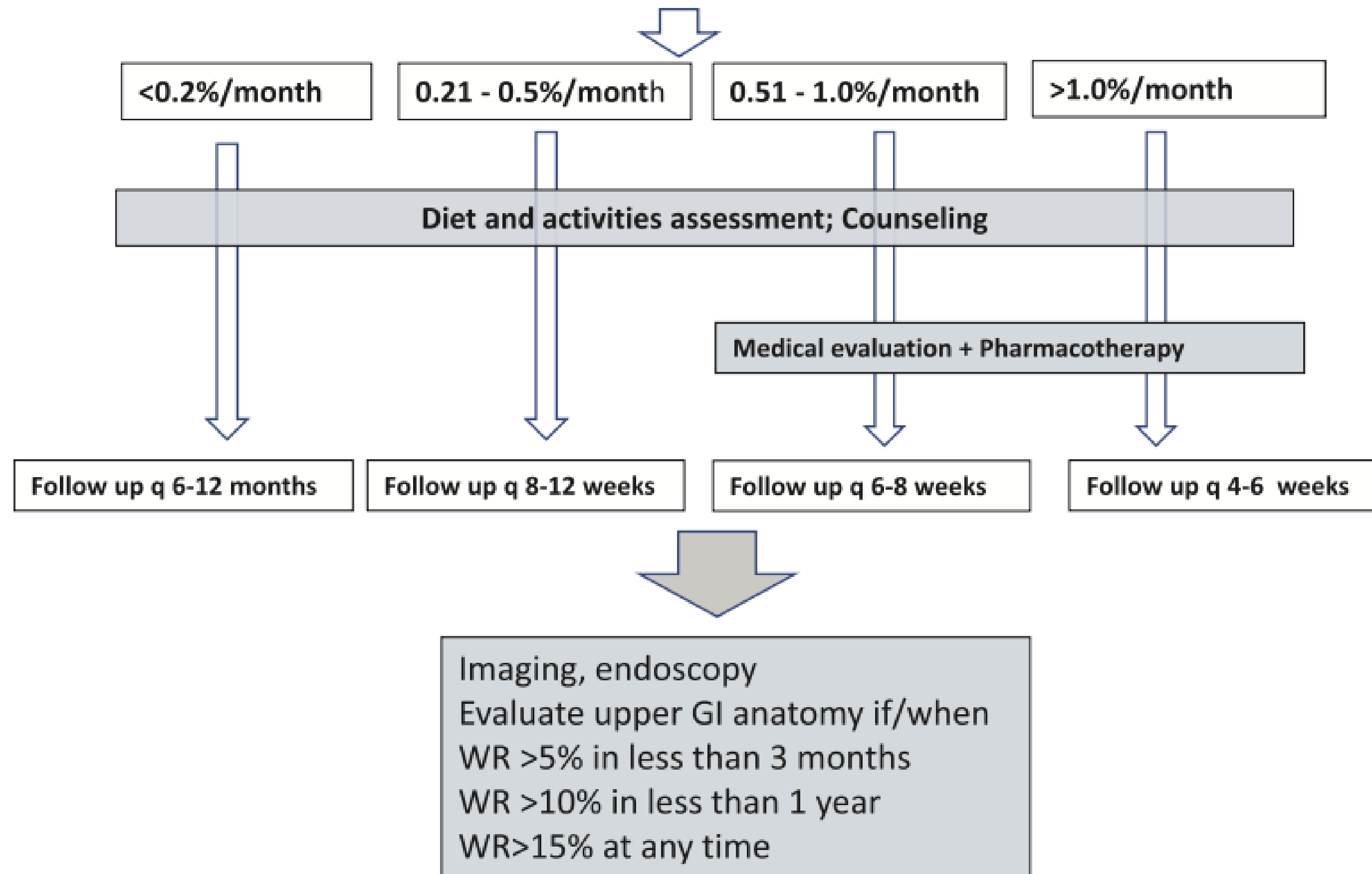
# The Problem

- Weight regain or inadequate weight loss is reported to affect up to 20% of patients.
- Much higher if you ask patients their opinion...
- Decision: Is it your job to provide maximal weight loss or maximal health?
- Does the existing literature help us take care of patients, or justify just another intervention?
- How can we limit bias in our decision process?

# Escalation of Therapy

- GLP-1 RA → Sleeve gastrectomy → re-SG → SADI → DS
- Inadequate weight loss and/or control of comorbidities → more frequent interventions
  - peri and post-operative
- Perhaps we should track **velocity of weight gain** and act accordingly
  - Individualize treatment for each patient

# Ideal F/U algorithm



## Approach to the Patient

### Approach to the Patient: Management of the Post-Bariatric Surgery Patient With Weight Regain

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**Abbreviations:** AA, African American; ADM, antiobesity medication; AUD, alcohol use disorder; BMI, body mass index; CNS, central nervous system; FDA, US Food and Drug Administration; GG, gastrogastroic; GI, gastrointestinal; GLP-1, glucagon-like peptide 1; MA, metabolic adaptation; RYGB, Roux-en-Y gastric bypass surgery; SADI, single anastomosis duodenoileal; T2DM, type 2 diabetes mellitus; VSG, vertical sleeve gastrectomy; WR, weight regain.

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#### Abstract

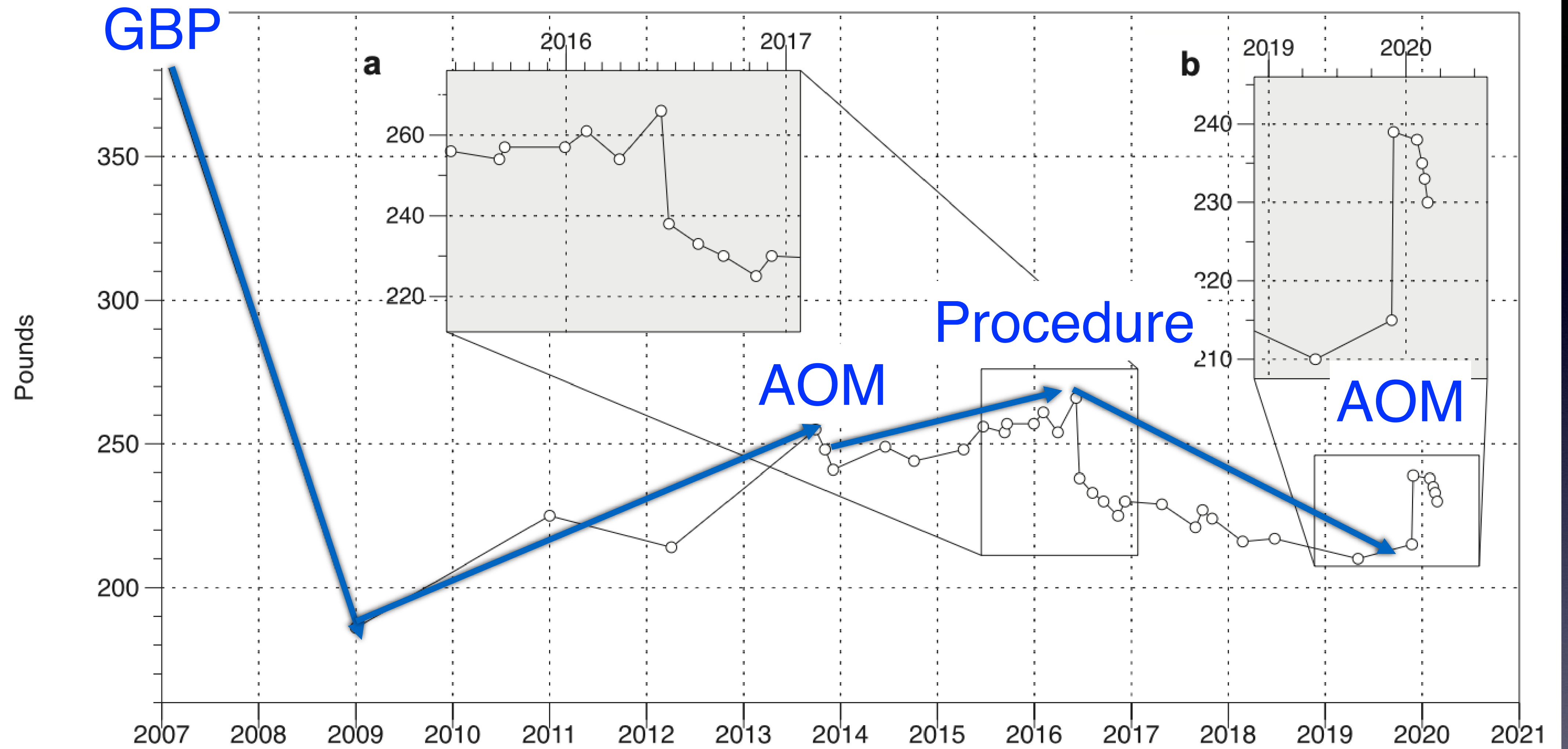
**Context:** Weight regain (WR) after bariatric surgery is emerging as a common clinical problem due to the increase in the number of procedures performed. Early interventions are necessary to curtail the potential recurrence of comorbid conditions. However, it is often difficult to recognize WR early enough to introduce mitigating measures because there are no current guidelines for timely diagnosis and assessment of the severity of this condition. **Objective:** We present a practical approach for the early recognition of WR, based on 11-year follow-up data from our multiethnic bariatric surgery patient population.

**Methods:** We classify WR according to the rate of increase in weight relative to nadir weight, normalized per 30-day interval. We also review pertinent literature about the etiologic factors contributing to WR after bariatric surgery.

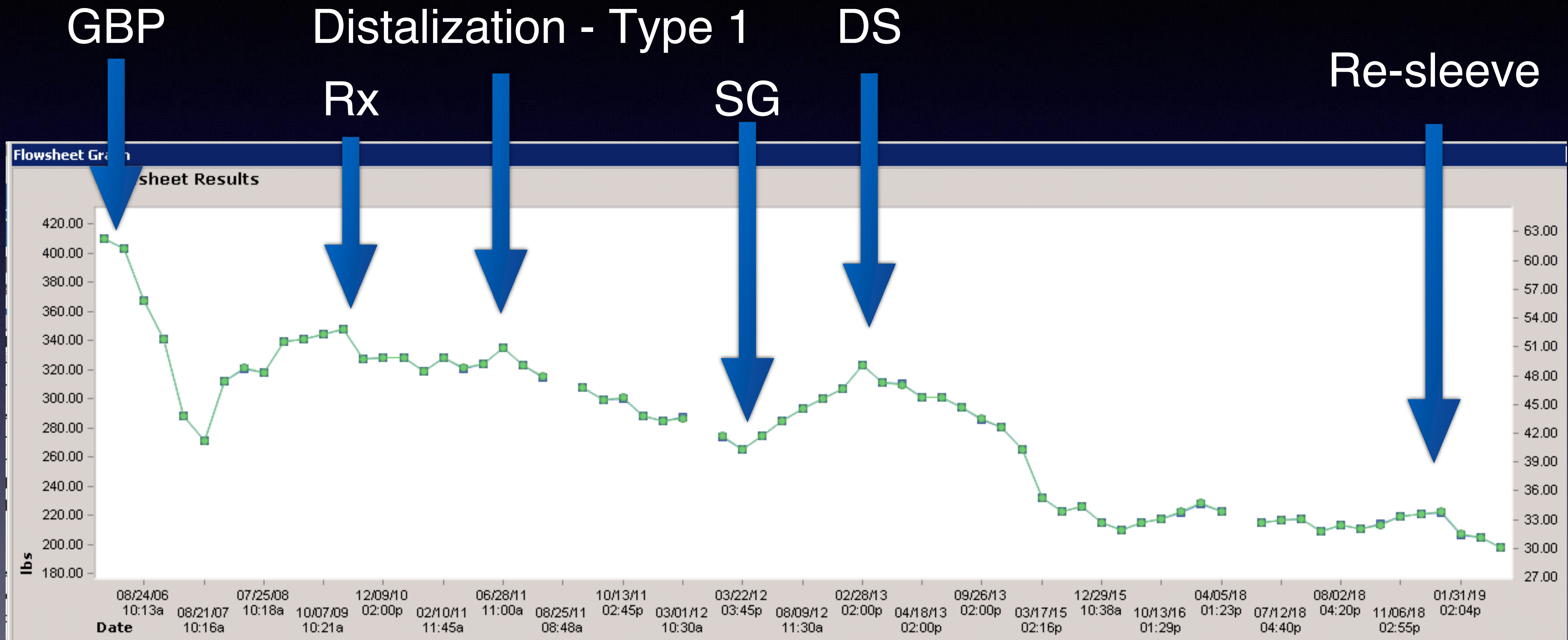
**Results:** According to our algorithm, mild, moderate, and rapid WR are defined as weight increases of 0.2% to <math><0.5\%</math>, 0.5% to 1.0%, and more than 1.0% of nadir weight per 30 days, respectively. Treatment options, including dietary counseling, use of antiobesity medication, and consideration of surgical revision, are described. A case is presented to illustrate the utility of timely identification of WR and the importance of collaboration between bariatric surgeons, obesity medicine specialists, and dietitians.

**Conclusion:** Our approach emphasizes the importance of regular long-term follow-up for all bariatric surgery patients.

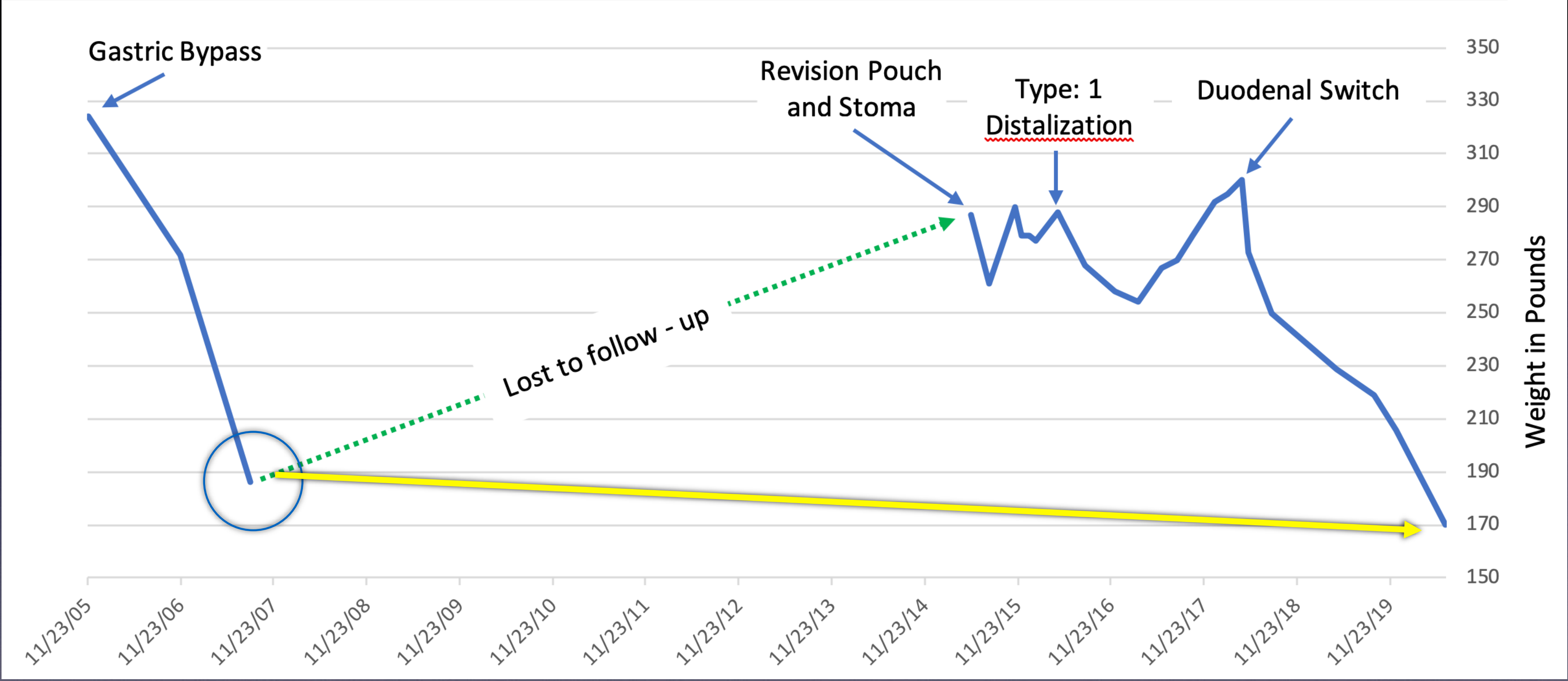
**Freeform/Key Words:** bariatric surgery, weight regain, weight loss surgery, gastric bypass, obesity, obesity treatment



# Escalation of Therapy - BMI: 71 kg/m<sup>2</sup>



# Escalation of Therapy



# Efficacy and safety of revisional treatments for weight regain or insufficient weight loss after Roux-en-Y gastric bypass: A systematic review and meta-analysis

Rutger J. Franken<sup>1</sup> | Josephine Franken<sup>1</sup> | Nina R. Sluiter<sup>1</sup> | Ralph de Vries<sup>2</sup> | Sjoerd Euser<sup>3</sup> | Victor E. A. Gerdes<sup>4,5</sup> | Maurits de Brauw<sup>1</sup>

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**Summary**

Weight regain or inadequate weight loss following Roux-en-Y gastric bypass poses a significant clinical challenge. Our objective was to evaluate various revisional techniques for addressing weight regain and insufficient weight loss after Roux-en-Y gastric bypass through a systematic review and meta-analysis. We performed a literature search (in PubMed and Embase) on revisional interventions in collaboration with a medical information specialist. Measured outcomes included body mass index at intervention, total weight loss during follow-up, and complications. Random effects models were used to determine pooled effect size and corresponding 95% confidence intervals. Thirty-nine studies were included: four studies reported on argon plasma coagulation, four studies on transoral outlet reduction, nine studies on transoral outlet reduction + argon plasma coagulation, four studies on pouch/gastrojejunal anastomosis revision, five on laparoscopic gastric banding, two studies on laparoscopic gastric banding + pouch resizing, 10 on distalization-RYGB, and one on duodenal switch. All techniques resulted in short-term clinically relevant weight loss. Endoscopic procedures had a short follow-up and resulted in modest and temporary weight loss. Surgical revision techniques were successful for weight loss in longer term follow-up, at the expense of high complication rates.

**KEYWORDS**

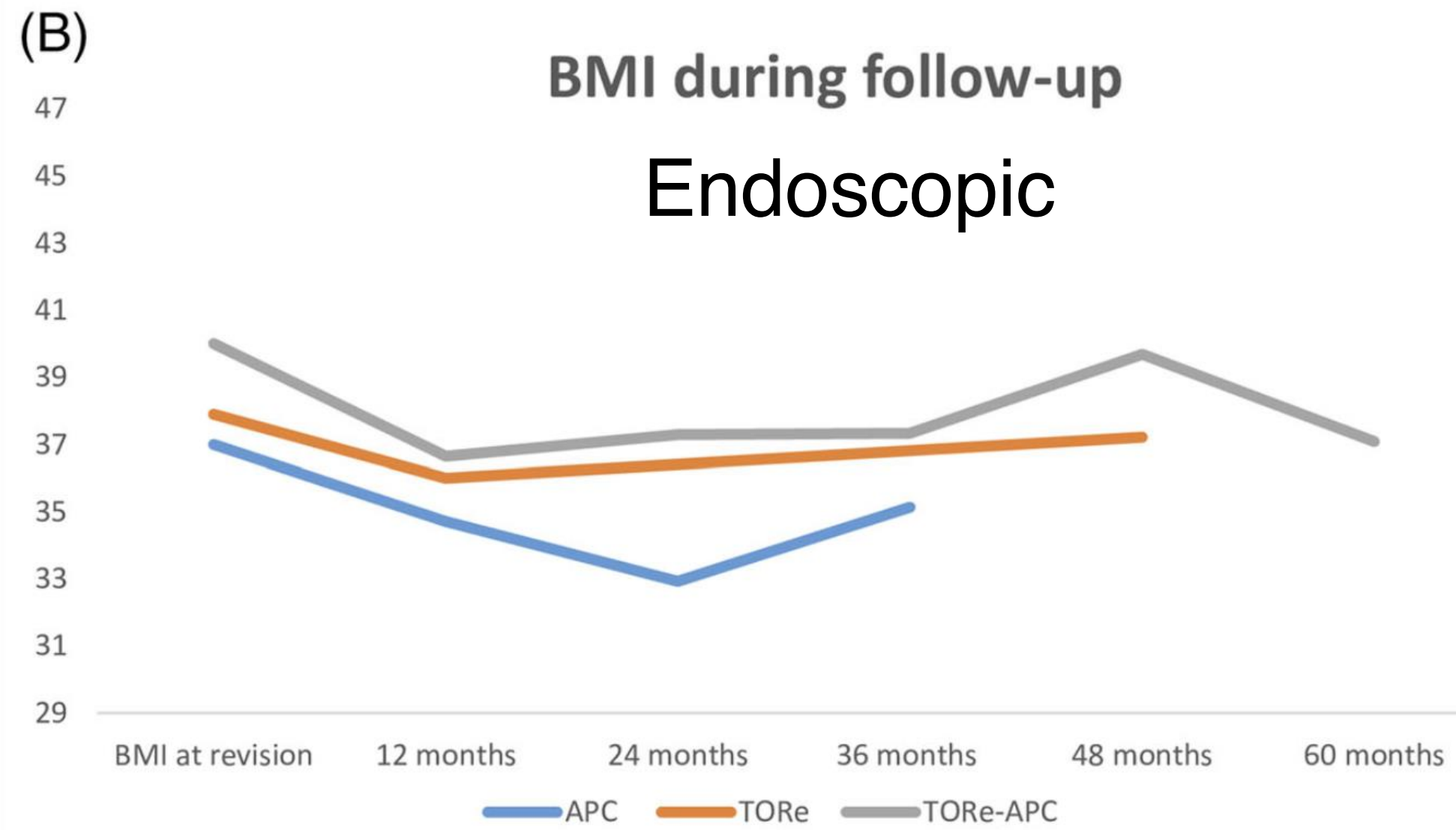
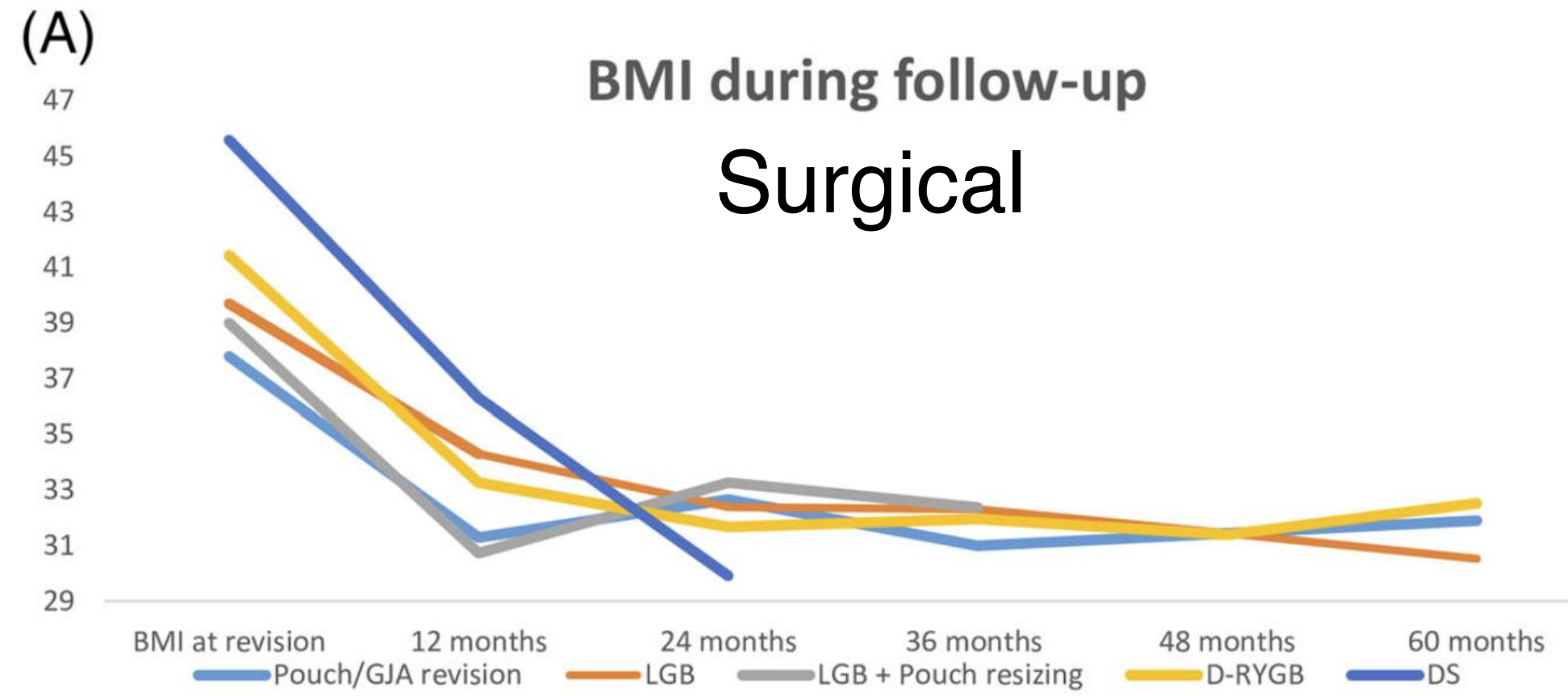
gastric bypass, insufficient weight loss, revision, weight regain

## 1 | INTRODUCTION

Bariatric surgery is the most effective long-term strategy for weight reduction and sustaining weight loss in patients with severe and

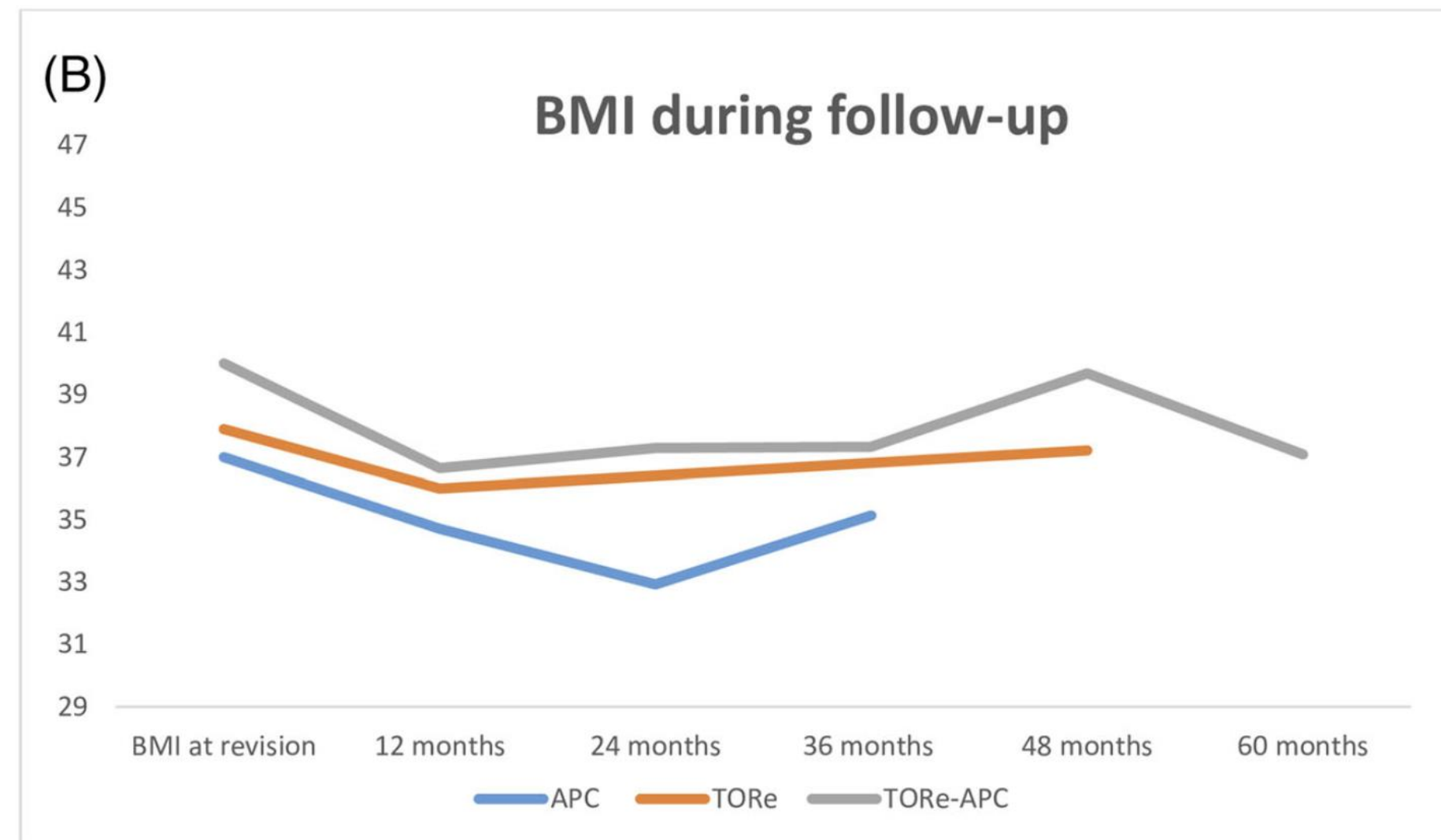
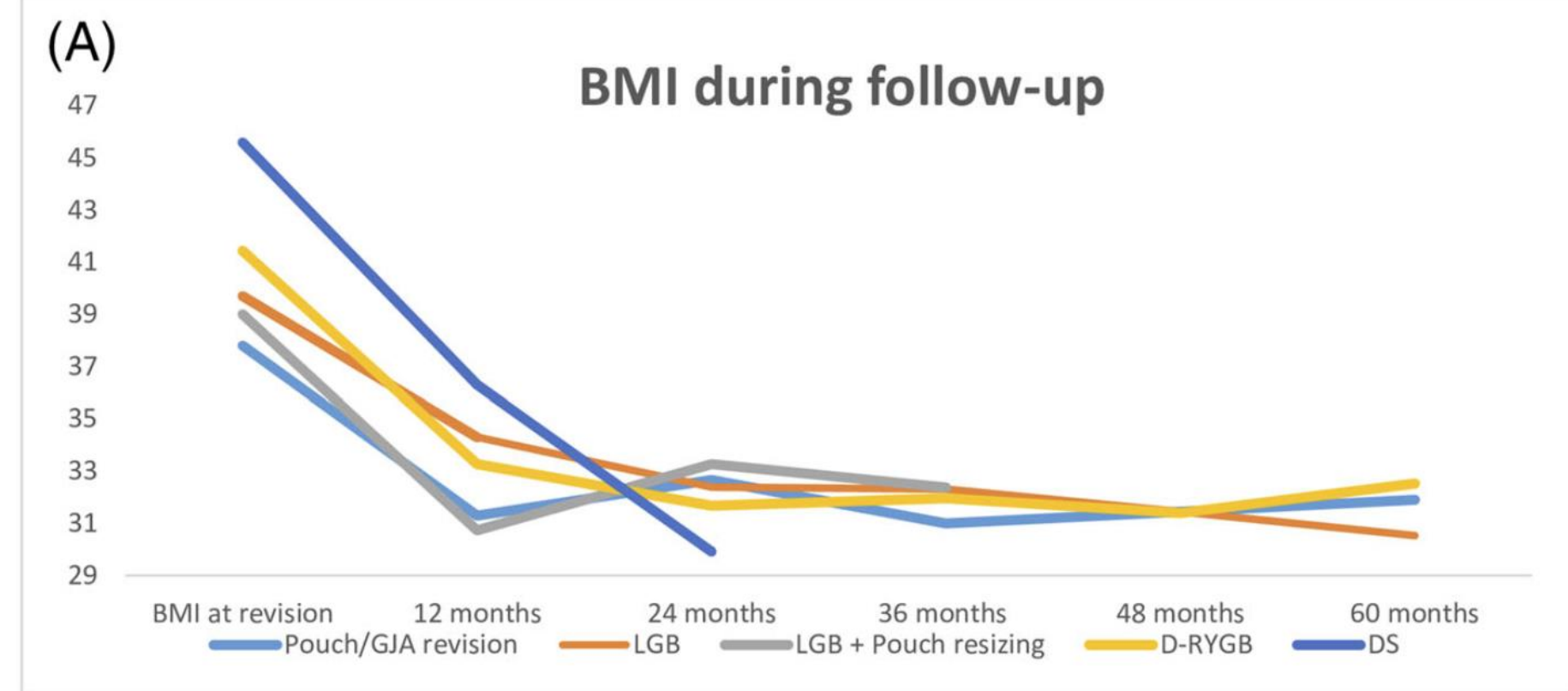
complex obesity.<sup>1,2</sup> One of the most frequently performed bariatric procedures is the laparoscopic Roux-en-Y gastric bypass (RYGB), which provides substantial weight loss and resolution of obesity-related comorbidities in the majority of patients.<sup>3,4</sup> However, depending on the population and definition used, 5% to 35% of patients experience inadequate weight loss (IWL) or weight regain (WR) after RYGB, often resulting in the recurrence of comorbidities.<sup>5,6</sup> IWL is often defined as less than 50% loss of excess weight loss (EWL); WR is often defined as more than 10% WR from nadir weight. However, definitions are highly variable.

**Abbreviations:** APC, argon plasma coagulation; BMI, body mass index; CI, confidence interval; D-RYGB, distalization of RYGB; DS, duodenal switch; EWL, excessive body weight loss; GJA, gastro-jejunal anastomosis; IWL, insufficient weight loss; LGB, laparoscopic gastric banding; NOS, Newcastle-Ottawa Scale; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses; RYGB, Roux-en-Y gastric bypass; SD, standard deviation; TORe, transoral outlet reduction; TWL, total weight loss; WR, weight regain.



# Non-medical options

- Pouch and/or GJ reduction
  - Endoscopic
  - Surgical
- Band over bypass
- Type 1 distalization
- Conversion
  - SADI
  - DS



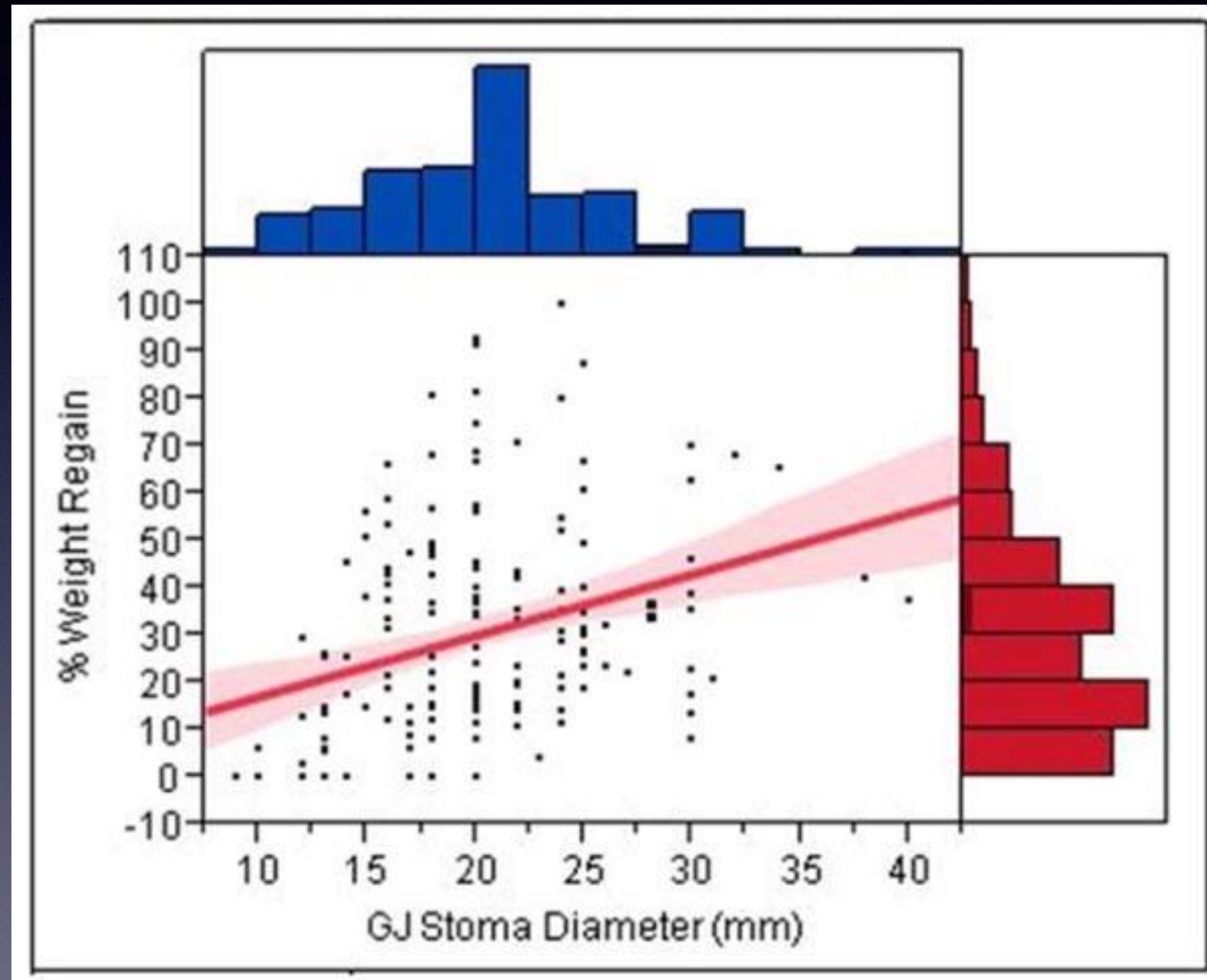
Stoma and/or pouch size.



# Does size of stoma make a difference?

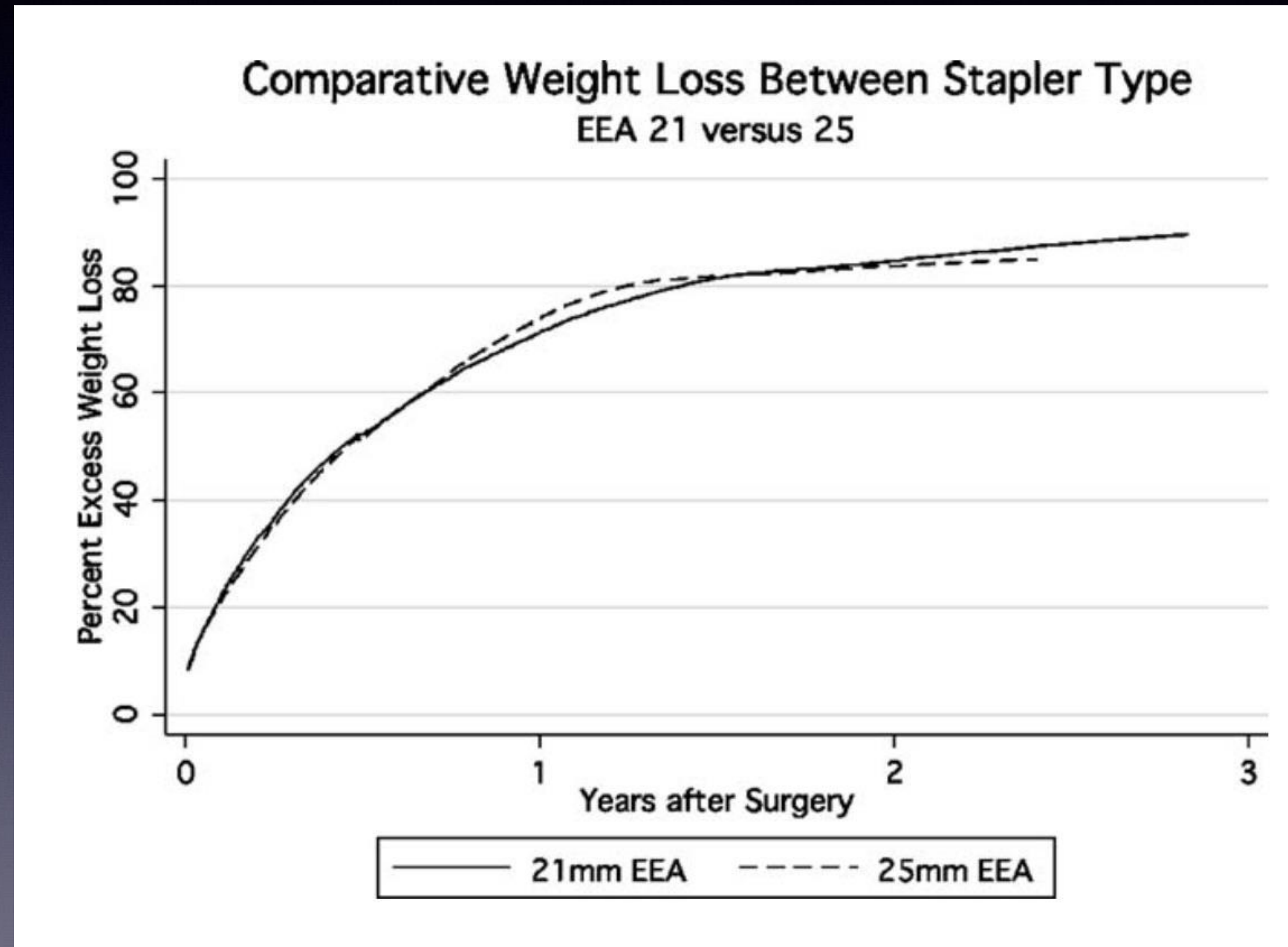
Abu Dayyeh BK, Lautz DB, Thompson CC. Gastrojejunal stoma diameter predicts weight regain after Roux-en-Y gastric bypass. Clin Gastroenterol Hepatol. 2011 Mar;9(3):228-33.

N=165  
60% WR



# The Effect of Stoma Size on Weight Loss After Laparoscopic Gastric Bypass Surgery: Results of a Blinded Randomized Controlled Trial

Cottam, et al: OBES SURG (2009) 19:13–17

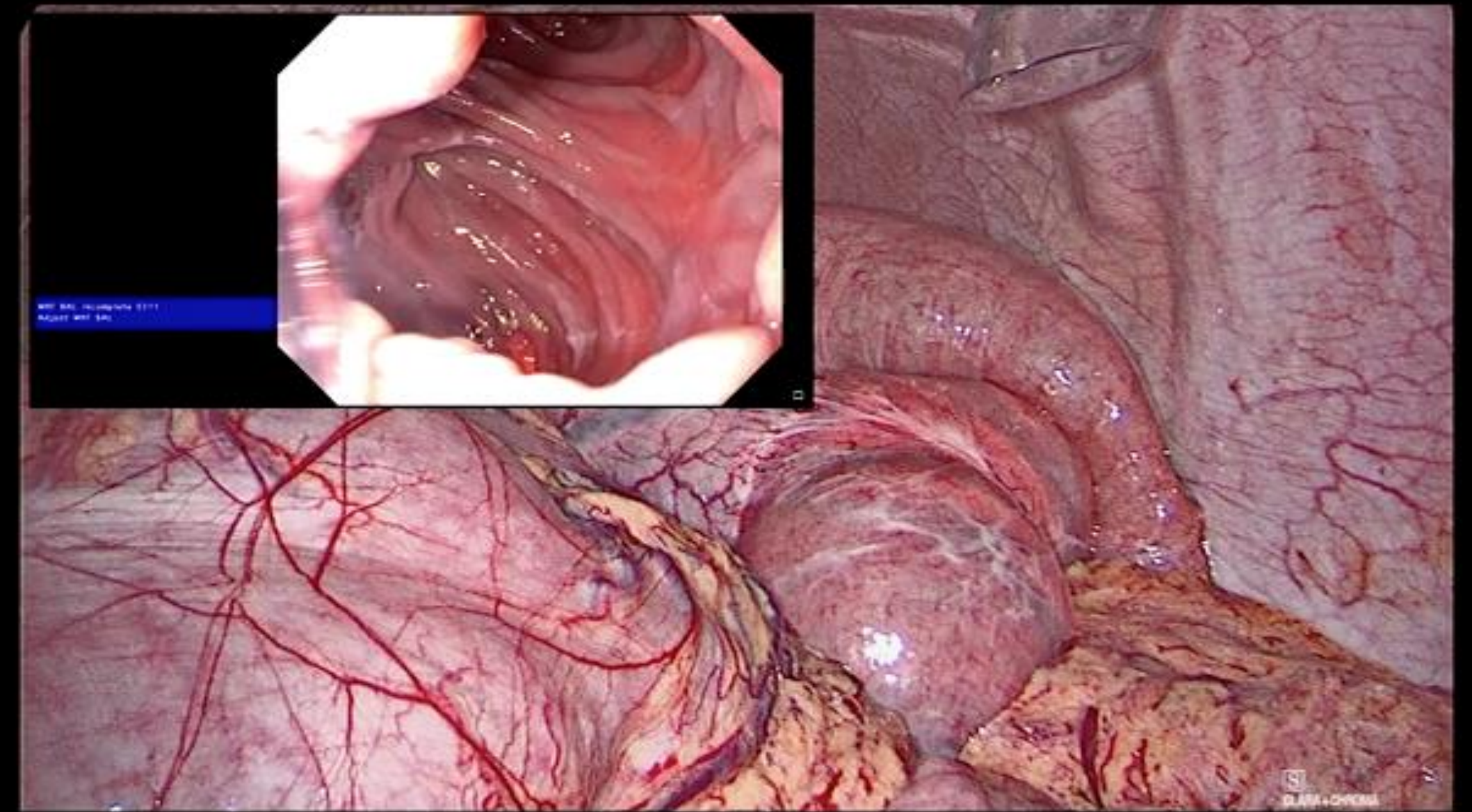
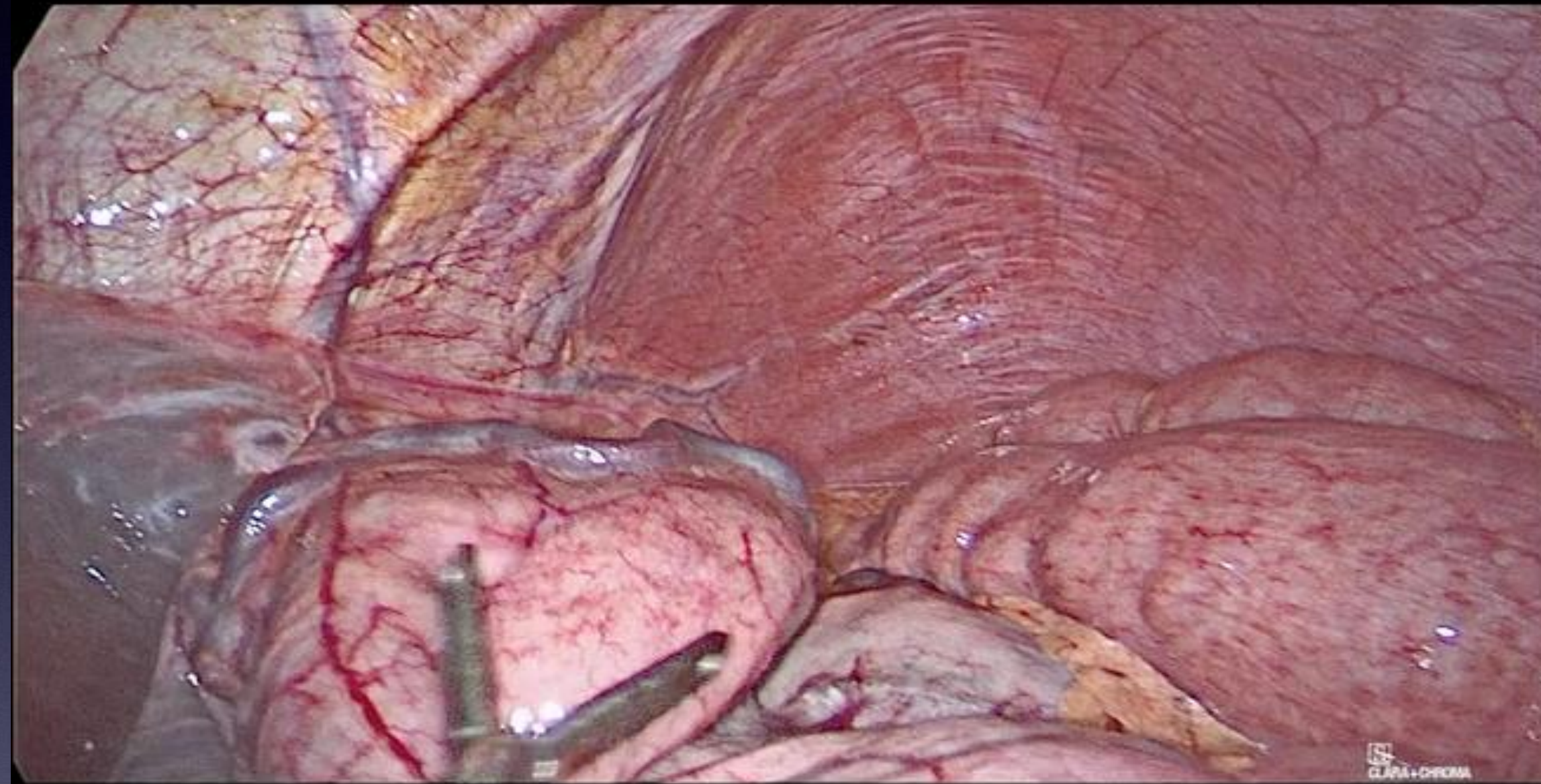


# Importance of **pouch size** in laparoscopic Roux-en-Y gastric bypass: a cohort study of 14,168 patients

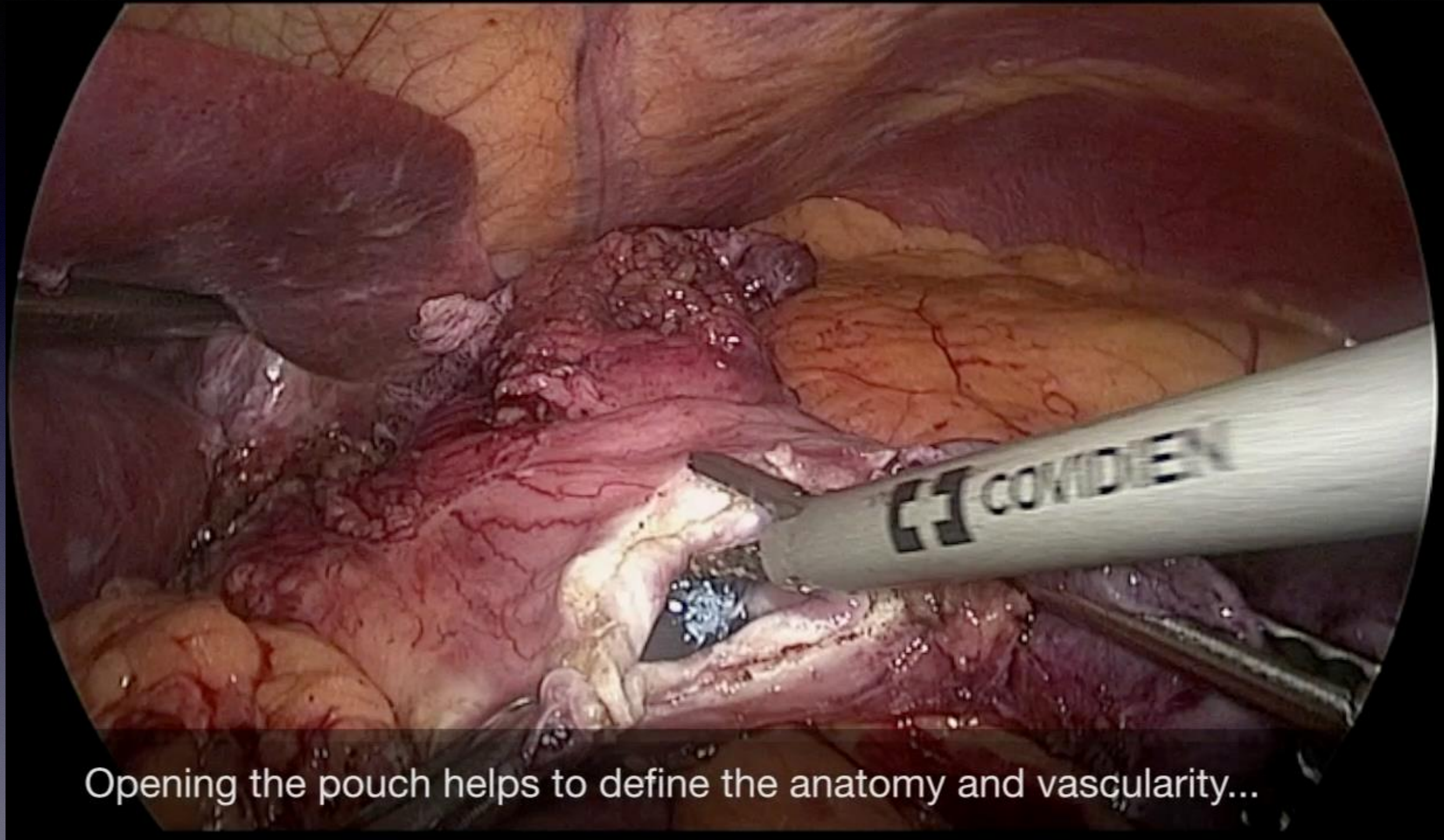
Ehdolm, et al: Surg Endosc (2016) 30:2011–2015

- 14,168 LRYGB patients from the Scandinavian Obesity Surgery Registry
- Mean length of stapler used for the pouch was 145 mm.
- At 1 year, symptomatic marginal ulcers were noted in 0.9 % of the patients.
- Each extra centimeter increases the relative risk of marginal ulcers by 14 %.
- **A smaller pouch reduces the risk of marginal ulcers, but does not predict better weight loss at 1 year.**

57 year-old female. Post GBP 2004  
BMI 65, 400 lbs → BMI 24, 148 lbs

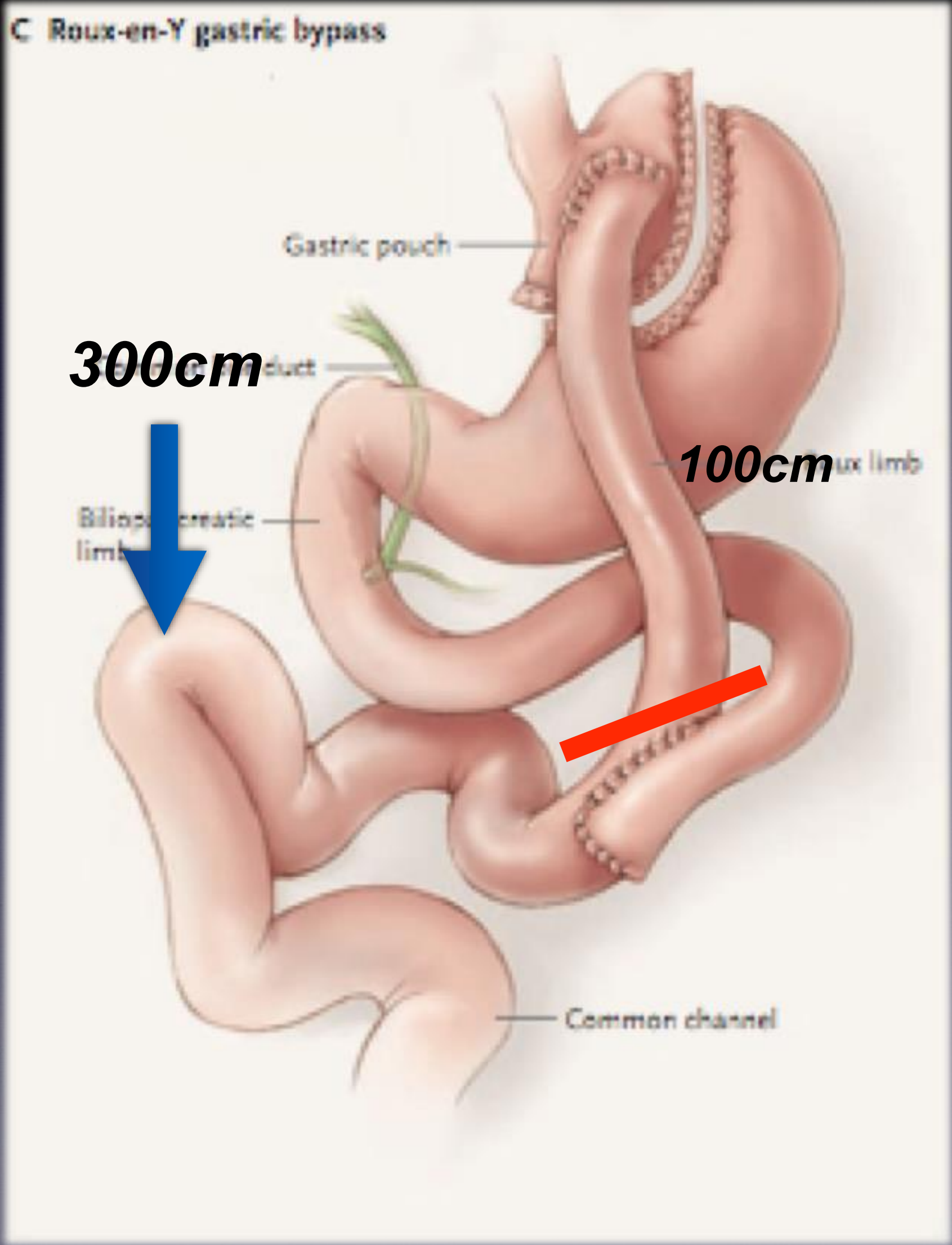


## Tips and Tricks - Pouch Reduction

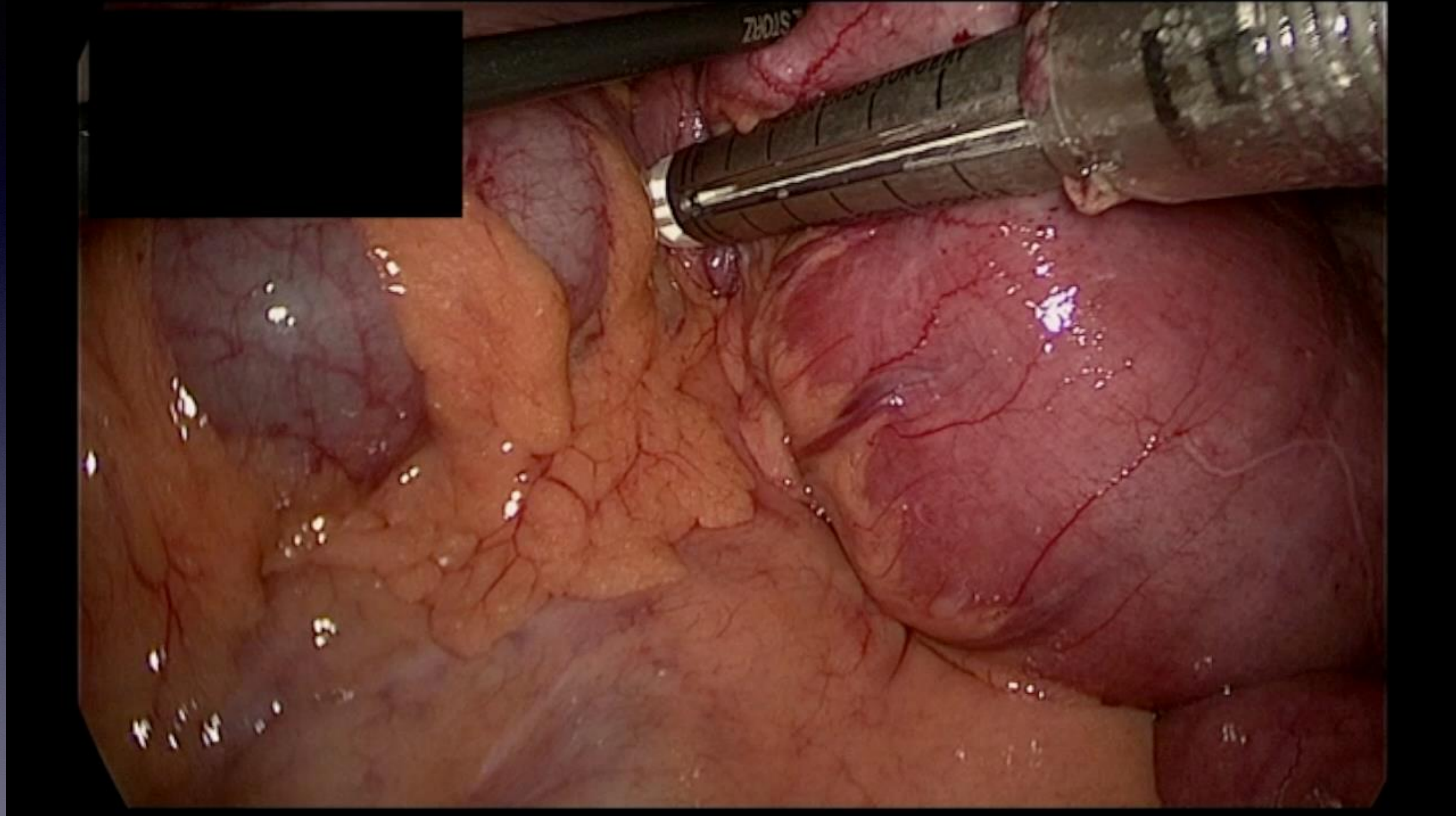


Opening the pouch helps to define the anatomy and vascularity...

# Distalization of GBP (type 1) - 4 m total length



# Type:1 Distalization



# Demographics and Results

Number of Patients	96		
Average Age	50.8 ± 9.7		
Average Pre-RYGB BMI	48.4 ± 9 kg/m <sup>2</sup>		
Average Pre-Distalization BMI	40.6 ± 7.3 kg/m <sup>2</sup>		
	1 year	2 year	3 year
%TWL after RYGB	15.3 ± 9.6%	19.4 ± 9.4%	24.2 ± 6.9%
Follow-up	70%	54.5%	50%

# Comorbidity Resolution

	@ distalization	1 year	2 years	3 years
DM	28 patients	66.7%	80%	100%
HTN	55 patients	28.6%	11.1%	0
Lipid	17 patients	40%	33.3%	33.3%
OSA	11 patients	50%	100%	100%
GERD	22 patients	66.7%	40%	40%

# Nutritional and Vitamin Levels

	Normal Range	Pre	6 Month	1 Year	2 Year	3 Year
Albumin (gm/dL)	(3.4 - 5.0)	3.8 ± 0.3	3.6 ± 0.4	3.7 ± 0.6	3.7 ± 0.4	3.6 ± 0.5
Hemoglobin (g/dL)	(12.3 - 15.3)	12.8 ± 1.2	12.5 ± 1.0	12.2 ± 1.4	12.1 ± 1.0	11.7 ± 1.5
Protein (gm/dL)	(6.4 - 8.2)	7.4 ± 0.5	6.8 ± 0.6	6.7 ± 0.7	6.5 ± 0.7	6.5 ± 0.7
Iron (ug/dL)	(50 - 170)	77.5 ± 33.3	83.0 ± 29.6	75.0 ± 29.7	67.3 ± 20.6	73.7 ± 50.2
Corrected Ca (mg/dL)	(8.5 - 10.1)	9.1 ± 0.4	9.1 ± 0.3	9.2 ± 0.4	9.0 ± 0.4	8.9 ± 0.6
PTH (pg/mL)	(10 - 65)	49.8 ± 24.0	82.5 ± 37.5	71.7 ± 35.8	83.1 ± 32.8	85.3 ± 37.0
B1 (nmol/L)	(78 - 185)	112.8 ± 54.5	126.7 ± 30.4	116.3 ± 38.4	116.6 ± 37.1	97.8 ± 42.0
B12 (pg/mL)	(200 - 1100)	679.0 ± 399.2	757.0 ± 413.2	955.1 ± 626.0	894.2 ± 596.6	885.5 ± 517.3
Vit-A (mcg/dL)	(38 - 106)	N/A	40.3 ± 11.7	28.1 ± 9.7	31.0 ± 1.4	33.0 ± 0.0
Vit-D (ng/mL)	(30 - 100)	30.8 ± 14.8	20.7 ± 11.9	23.6 ± 12.9	24.2 ± 9.3	24.6 ± 16.3

# Comparison of Nutrition for Distal Type 1 vs Primary GBP\*

**Table 5**  
Proportion of patients with (TALL) of  
400 to 450 cm

	3 yr	
	% Low (n)	
Albumin, gm/dL	21.1 (19)	→
Hemoglobin, g/dL	15.8 (19)	→
Protein, gm/dL	.0 (19)	
Iron, ug/dL	27.3 (11)	
Corrected Ca, mg/dL	21.1 (19)	→
B1, nM	16.7 (12)	
B12, pg/mL	9.1 (11)	→
Vit-A, mcg/dL	100.0 (1)	
Vit-D, ng/mL	76.9 (13)	
	% High (n)	
PTH, pg/mL	63.6 (11)	→

Primary GBP  
@ 10 years

34%

16%

13%

60%

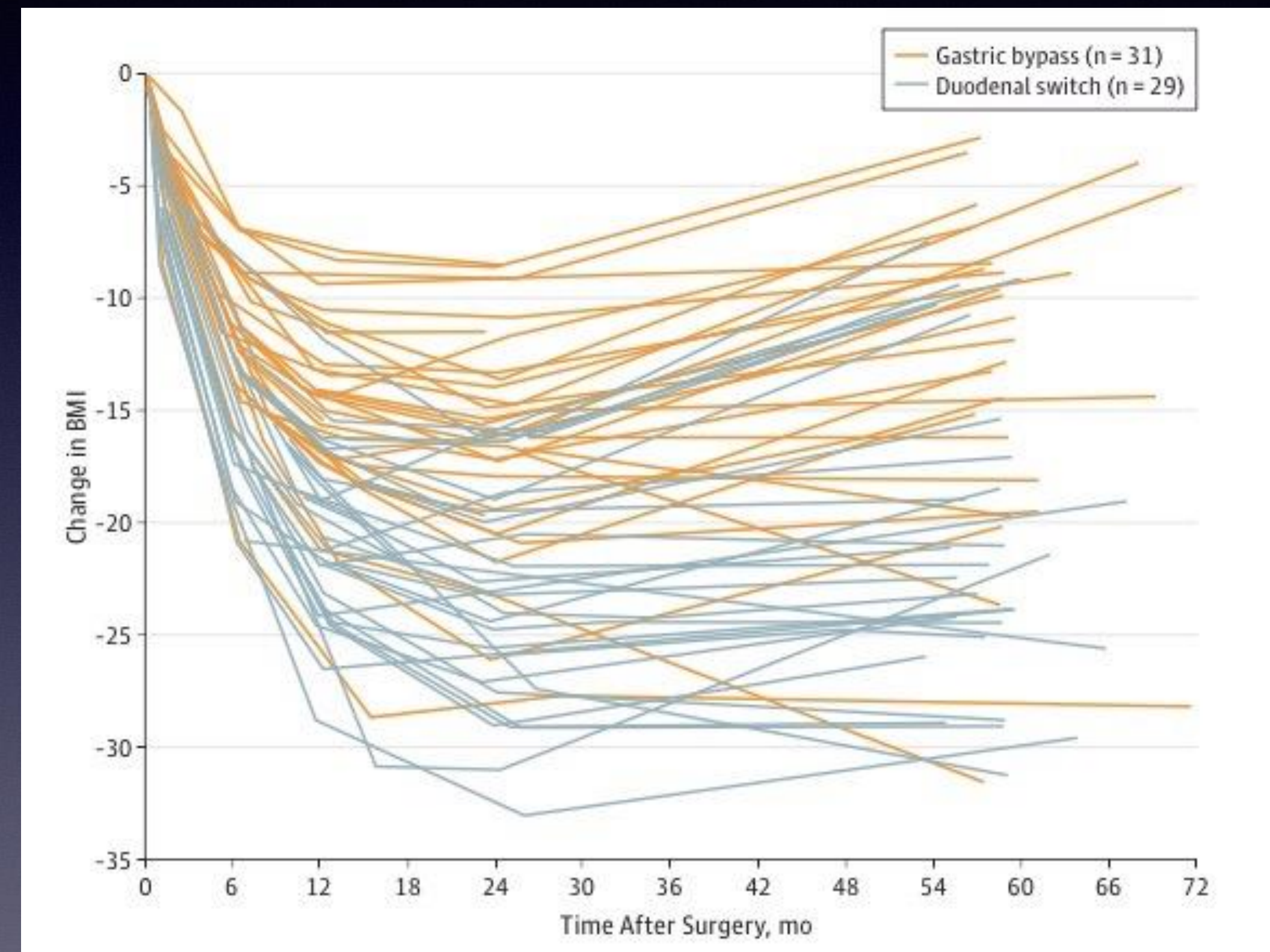
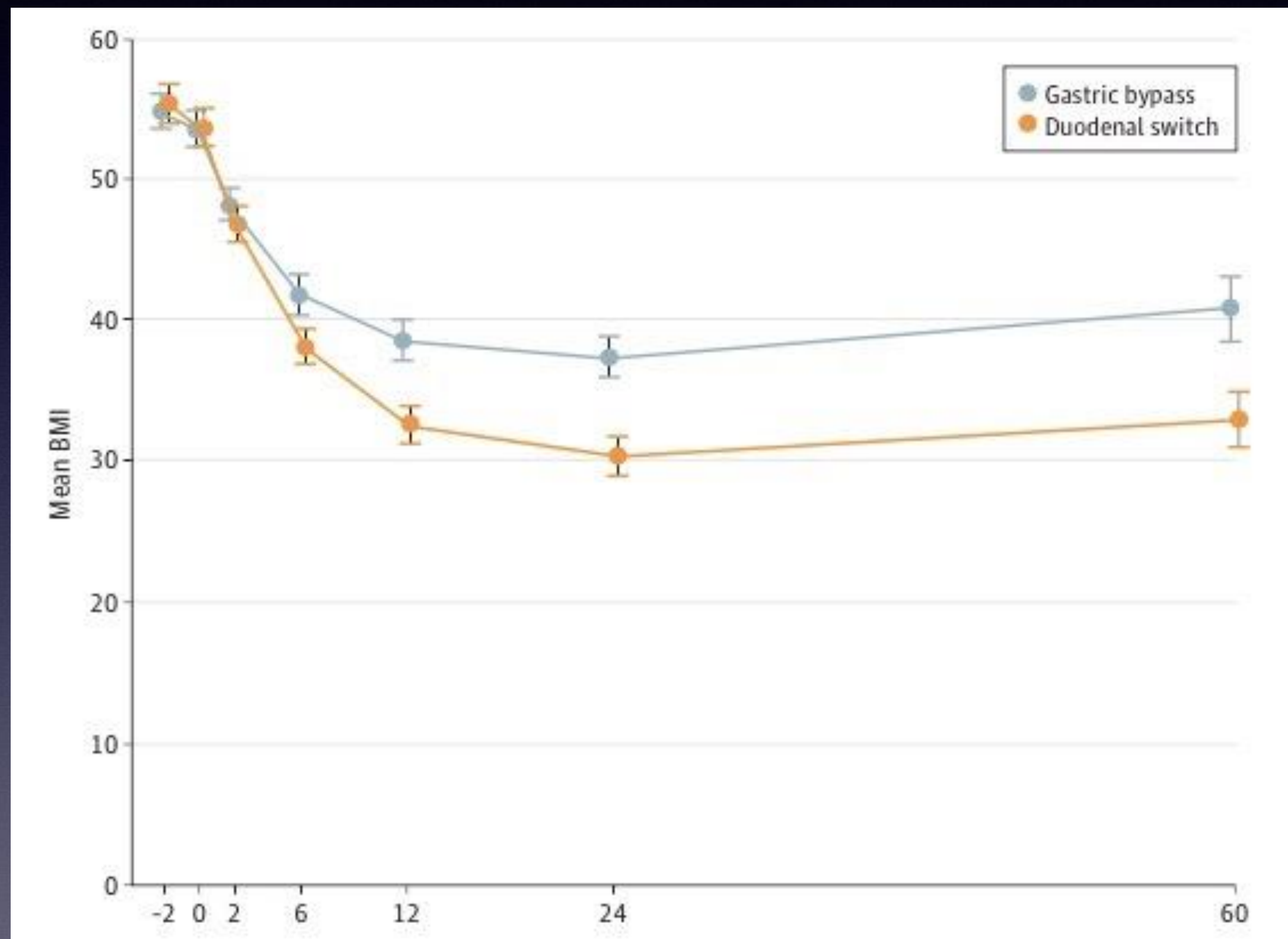
26%

PTH = parathyroid hormone  
Number of patients

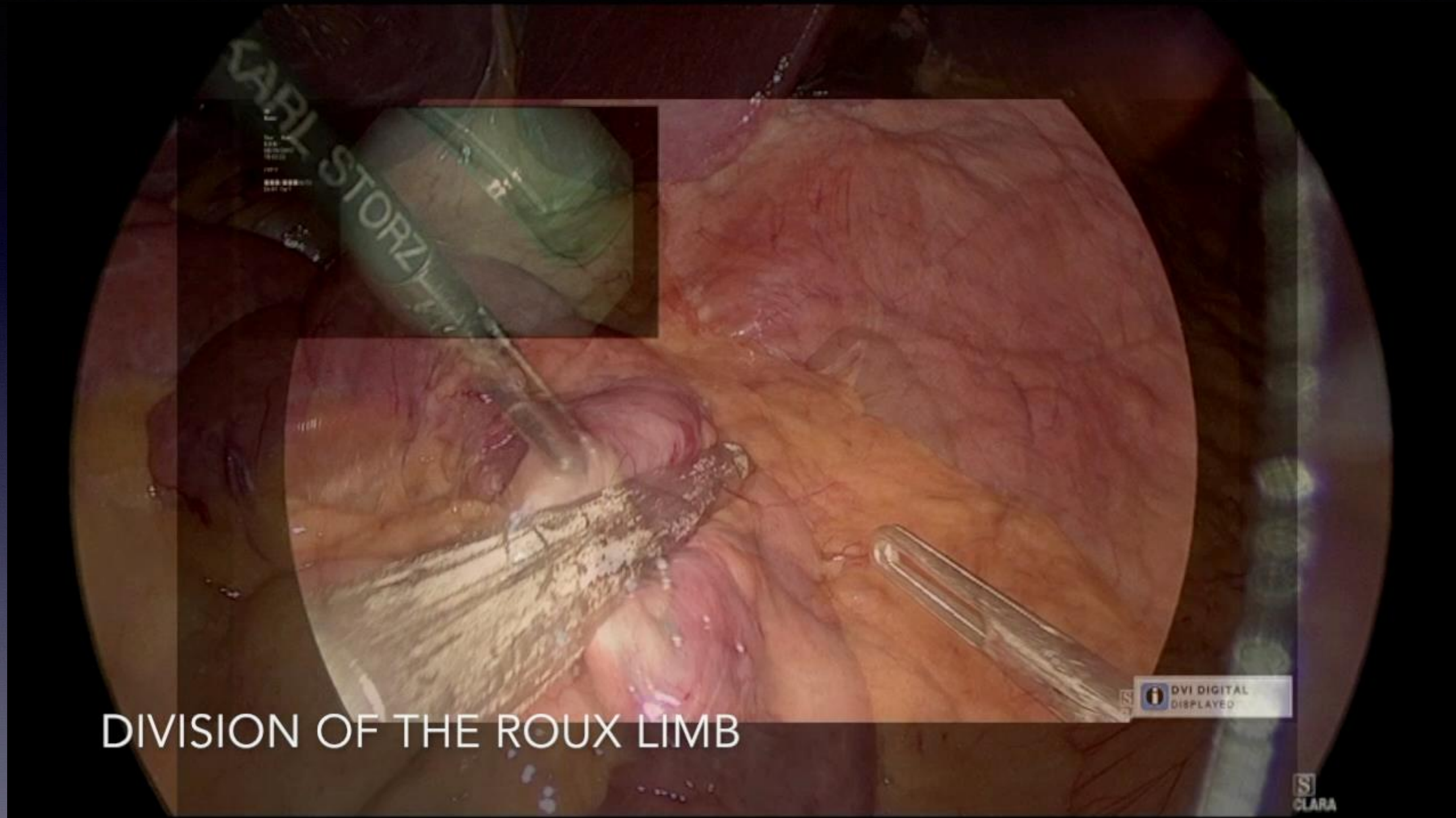
\*Higa et al. Laparoscopic Roux-en-Y gastric bypass: 10-year follow-up. *Surgery for Obesity and Related Diseases* 7 (2011) 516–525

# Five-Year Outcomes After Laparoscopic Gastric Bypass and Laparoscopic Duodenal Switch in Patients With Body Mass Index of 50 to 60. A Randomized Clinical Trial

Hilde Risstad, MD; Torgeir T. Søvik, MD, PhD; My Engström, RN, PhD; Erlend T. Aasheim, MD, PhD; Morten W. Fagerland, MSc, PhD; Monika Fagevik Olsén, RPT, PhD; Jon A. Kristinsson, MD, PhD; Carel W. le Roux, MD, PhD; Thomas Bøhmer, MD, PhD; Kåre I. Birkeland, MD, PhD; Tom Mala, MD, PhD; Torsten Olbers, MD, PhD

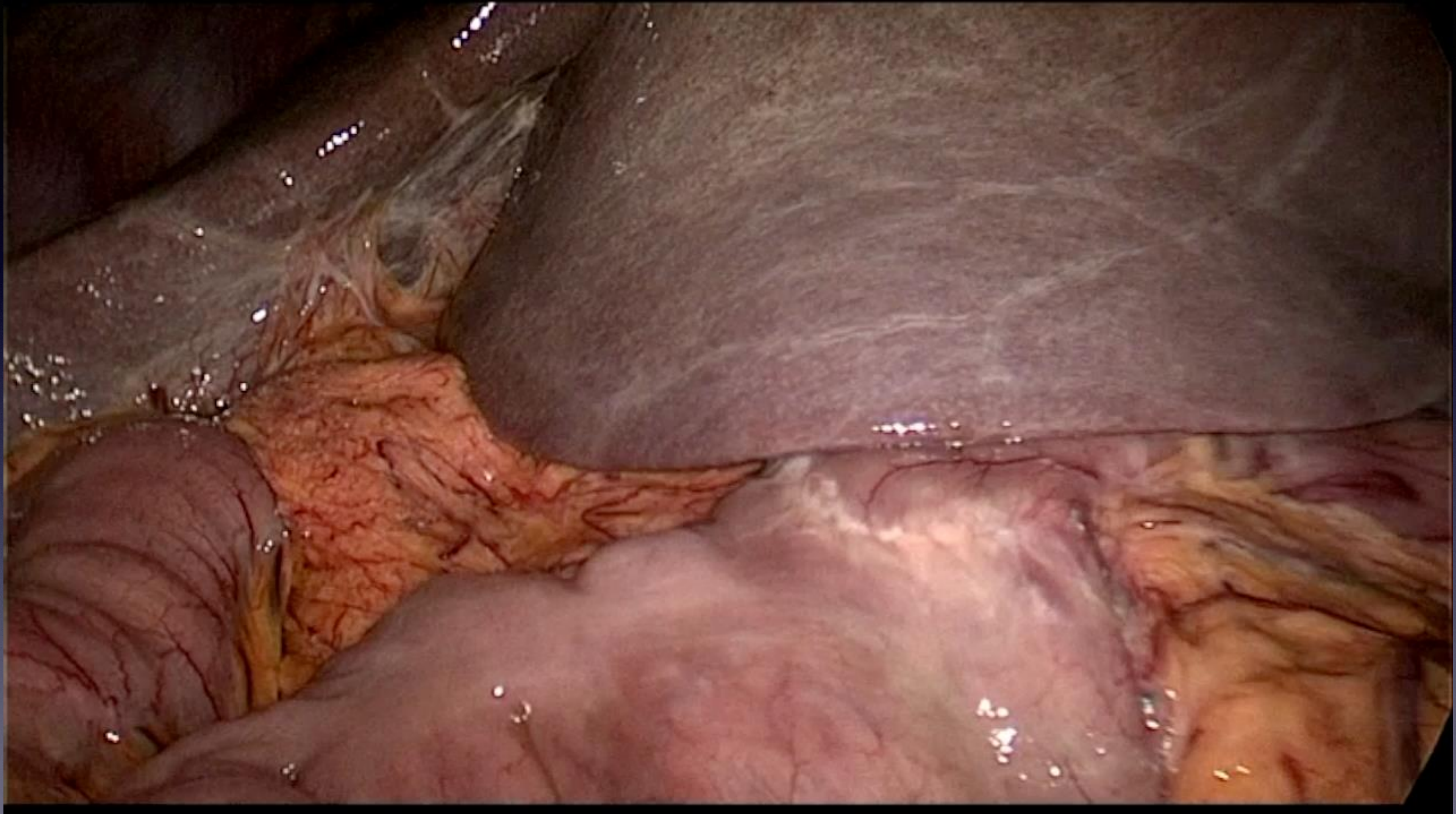


# SADI Conversion



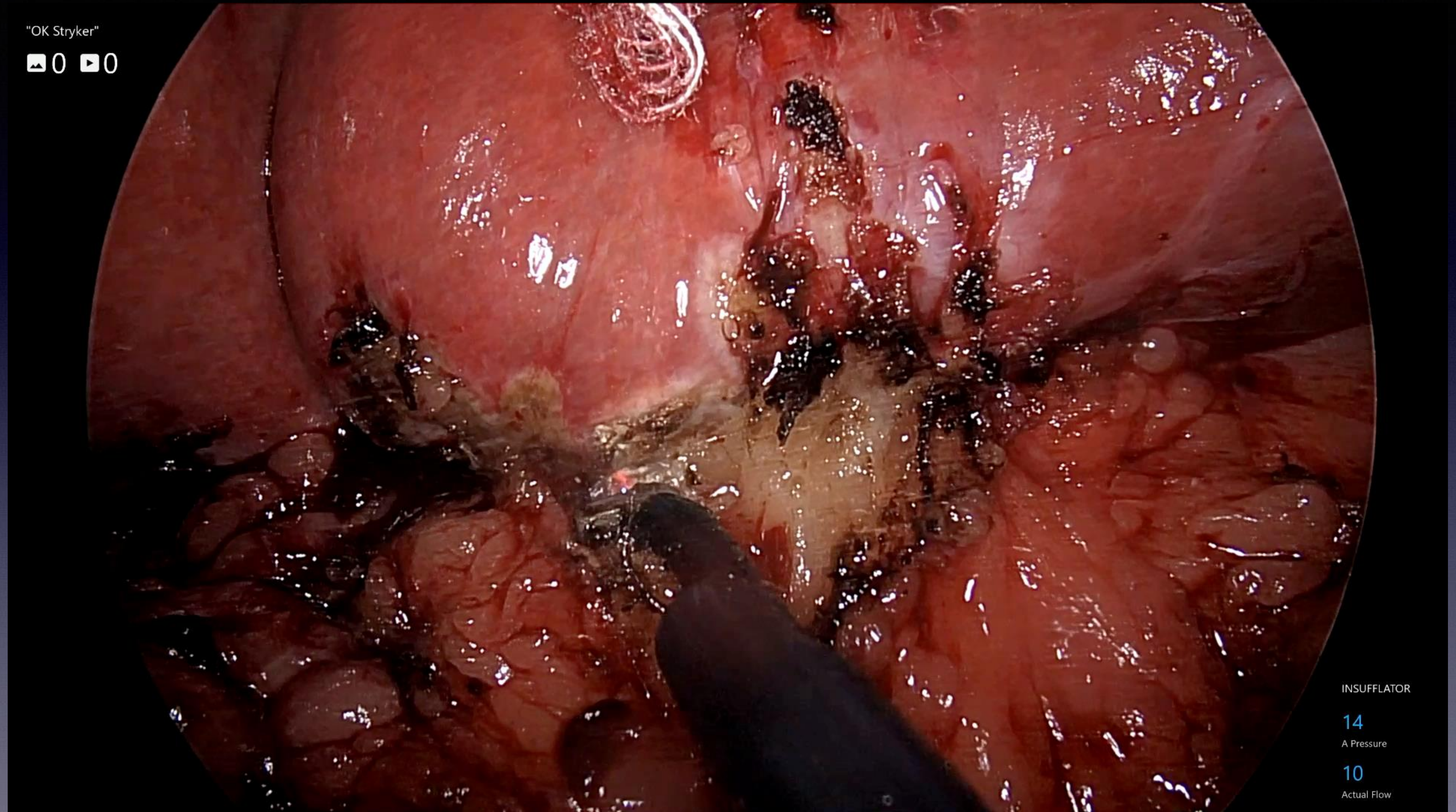
DIVISION OF THE ROUX LIMB

Think about the next guy:  
Be prepared to de-escalate...



# Reversal of SADI: courtesy of Pearl Ma

"OK Stryker"



INSUFFLATOR

14  
A Pressure

10  
Actual Flow



# Efficacy and safety of revisional treatments for weight regain or insufficient weight loss after Roux-en-Y gastric bypass: A systematic review and meta-analysis

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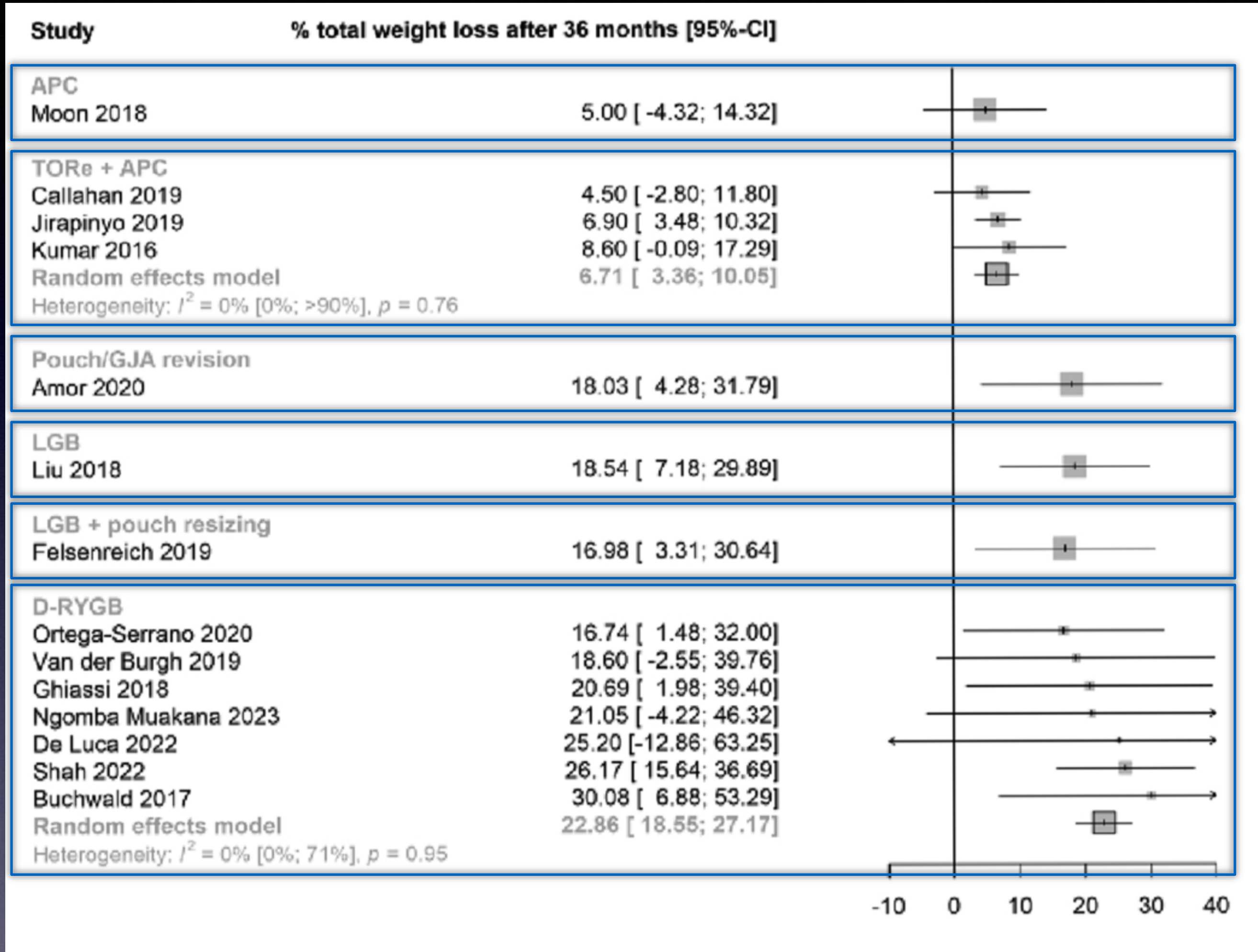
gastric bypass, insufficient weight loss, revision, weight regain

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Everything seems to work.



Fresno Medical Education Program

Advanced Laparoscopic Surgery Associates Medical Group

But at what cost/risk?



# Weight regain after GBP - What is the best approach?

- Start with the right operation.
- Evaluate anatomy and re-engage in program.
  - Nutritional evaluation.
- Pharmaceutical manipulation.
- If original BMI  $> 50 \text{ kg/m}^2$  → think conversion (in stages)
- If original BMI  $< 50 \text{ kg/m}^2$  and large pouch → endoscopic/surgical options.
- If DM main issue, type: 1 distalization

# Contraindication for Surgery

- Uncontrolled mental health condition or addiction
- Malnutrition not easily correctable
- Unknown GI pathology (chronic diarrhea/pain)
- Non-compliant with F/U or recommendations
- Patient with unrealistic expectations
- Unfavorable risk/benefit ratio



**Frustration**  
Just Ahead