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Cosimo Callari
PRESIDENTE

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RESP. SCIENTIFICO

PALERMO, 13 - 14 MARZO 2025

IL TRATTAMENTO INTEGRATO DELL'OBESITÀ

CHIRURGIA, ENDOSCOPIA E FARMACI UNA SINERGIA VINCENTE

Weight regain o insufficient weight loss: Ruolo dell'endoscopia

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GASTROENTEROLOGY AND DIGESTIVE ENDOSCOPY UNIT

AZIENDA DI RILIEVO NAZIONALE ED ALTA SPECIALIZZAZIONE

" OSPEDALI " ARNAS CIVICO DI CRISTINA BENFRATELLI

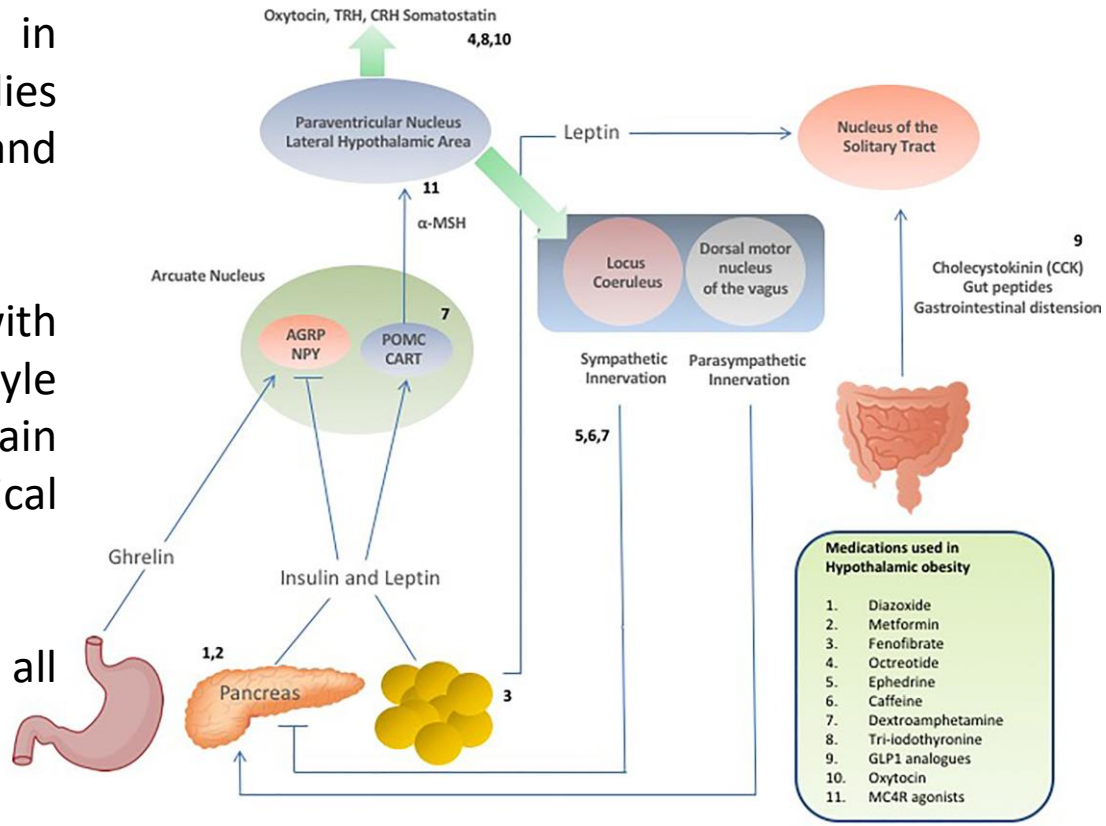
PALERMO, ITALY

INTRODUCTION

The phenomenon of weight regain (WR) is a frequent issue in bariatric surgery and has been reported in many studies analyzing obesity recurrence, its related comorbidities and worsening of health-related quality of life

The background of WR remains unknown and associated with high initial body mass index (BMI), insufficient lifestyle modification (rarely change their eating habits and remain sedentary) and lack of patient adherence to psychological support.

Revision bariatric surgery in the USA accounts for 15.4% of all bariatric interventions in 2018 (6% in 2011).



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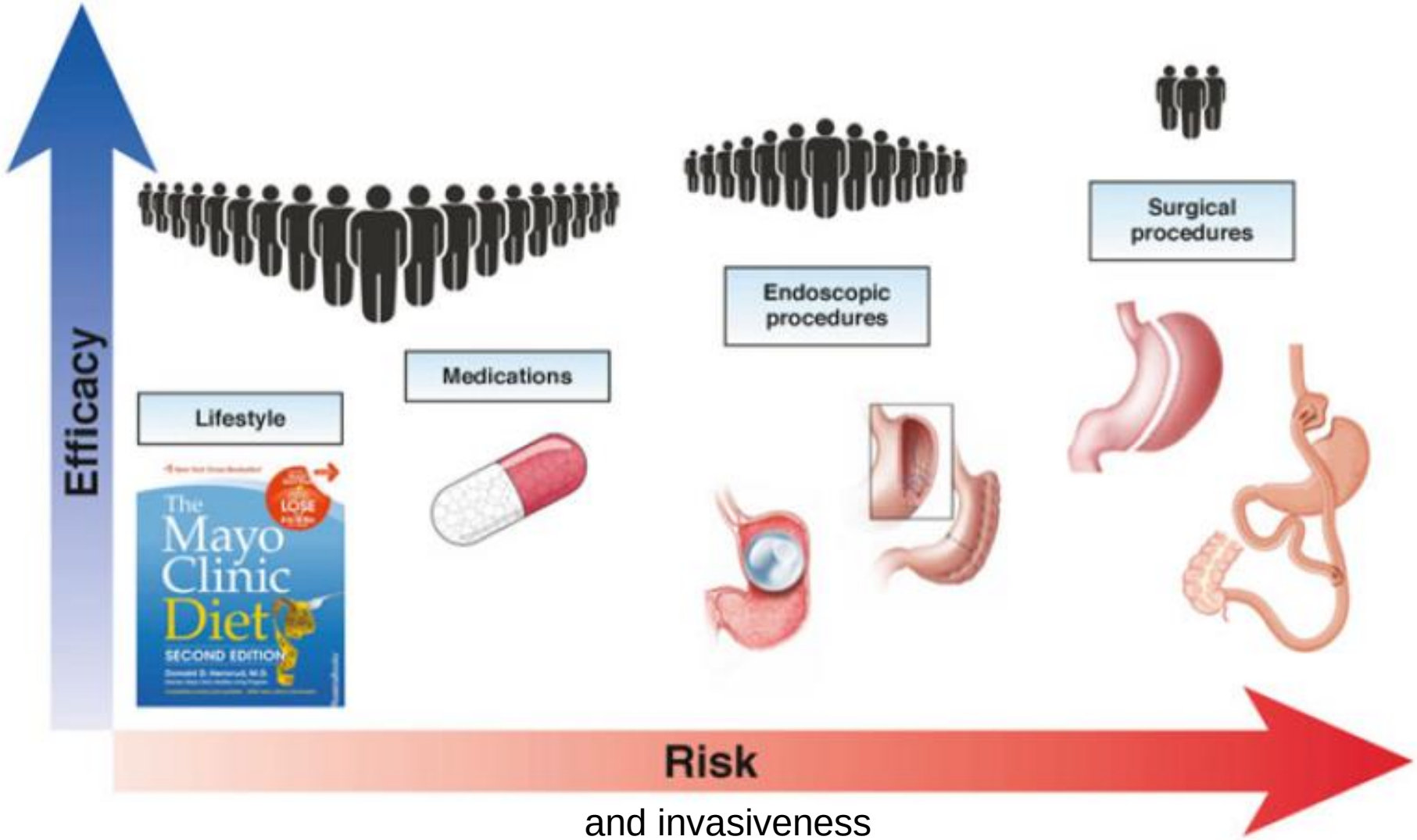
Bulajic M. et al, World J Gastrointest Surg. 2021 Dec

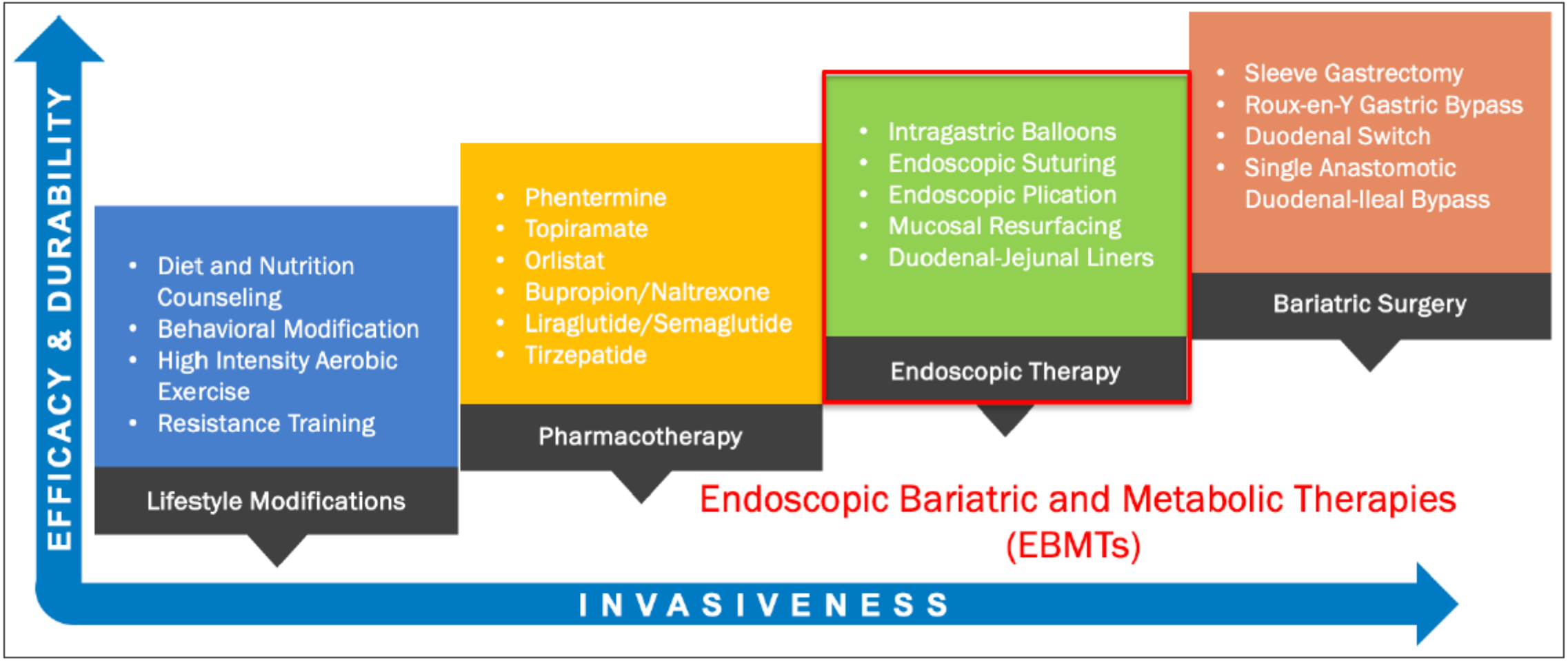
INTRODUCTION



and invasiveness

Jaruvongvanich V. et al, Endoscopic Treatment for Obesity and Weight Management Book Chapter, 2020

INTRODUCTION



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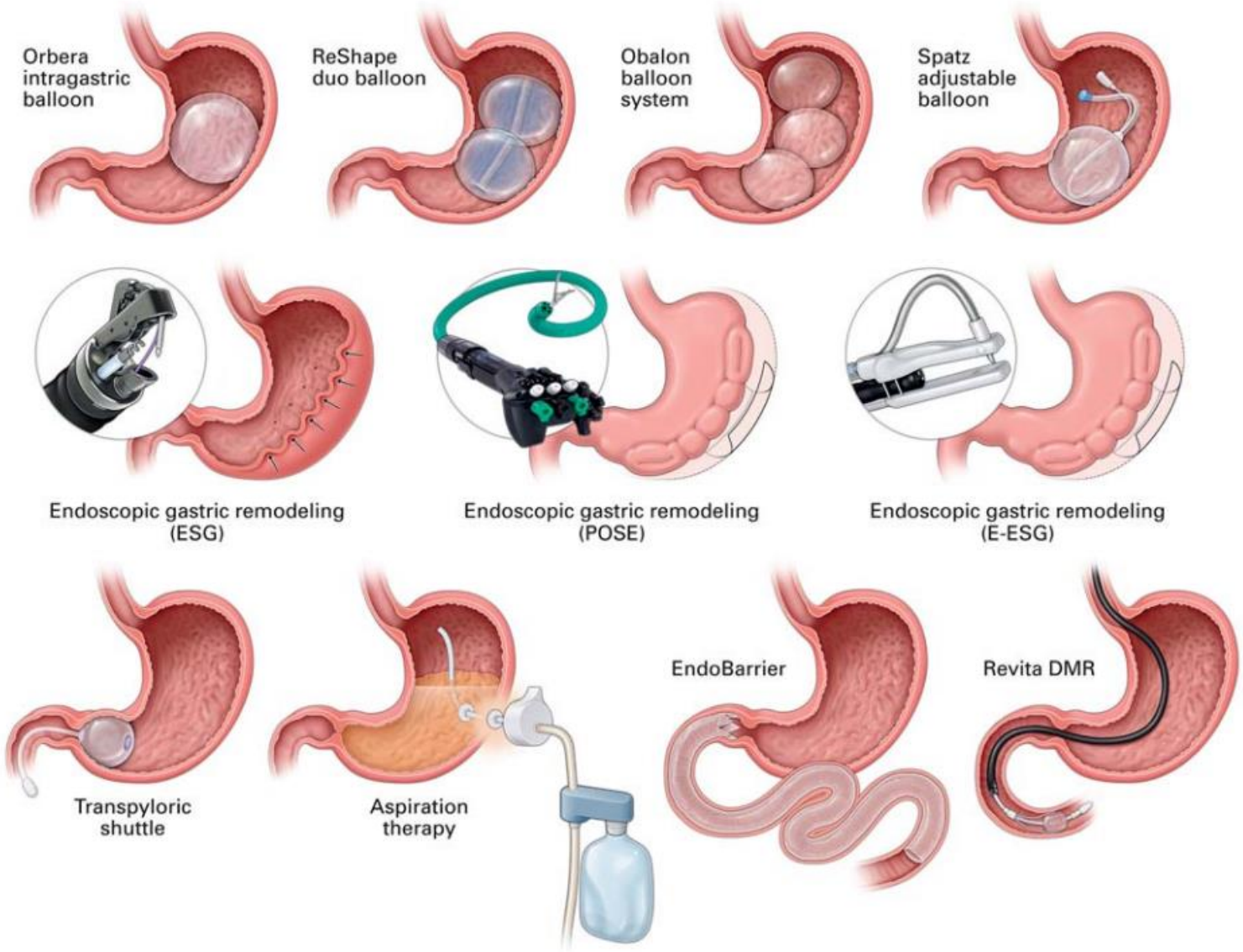
Allencherril RP et al, Methodist DeBakey Cardiovasc J. 2025;21(2):74-83.

BARIATRIC ENDOSCOPIC TREATMENT



Jirapinyo P. al. ASGE and ESGE guidelines, Endoscopy 19 April 2024

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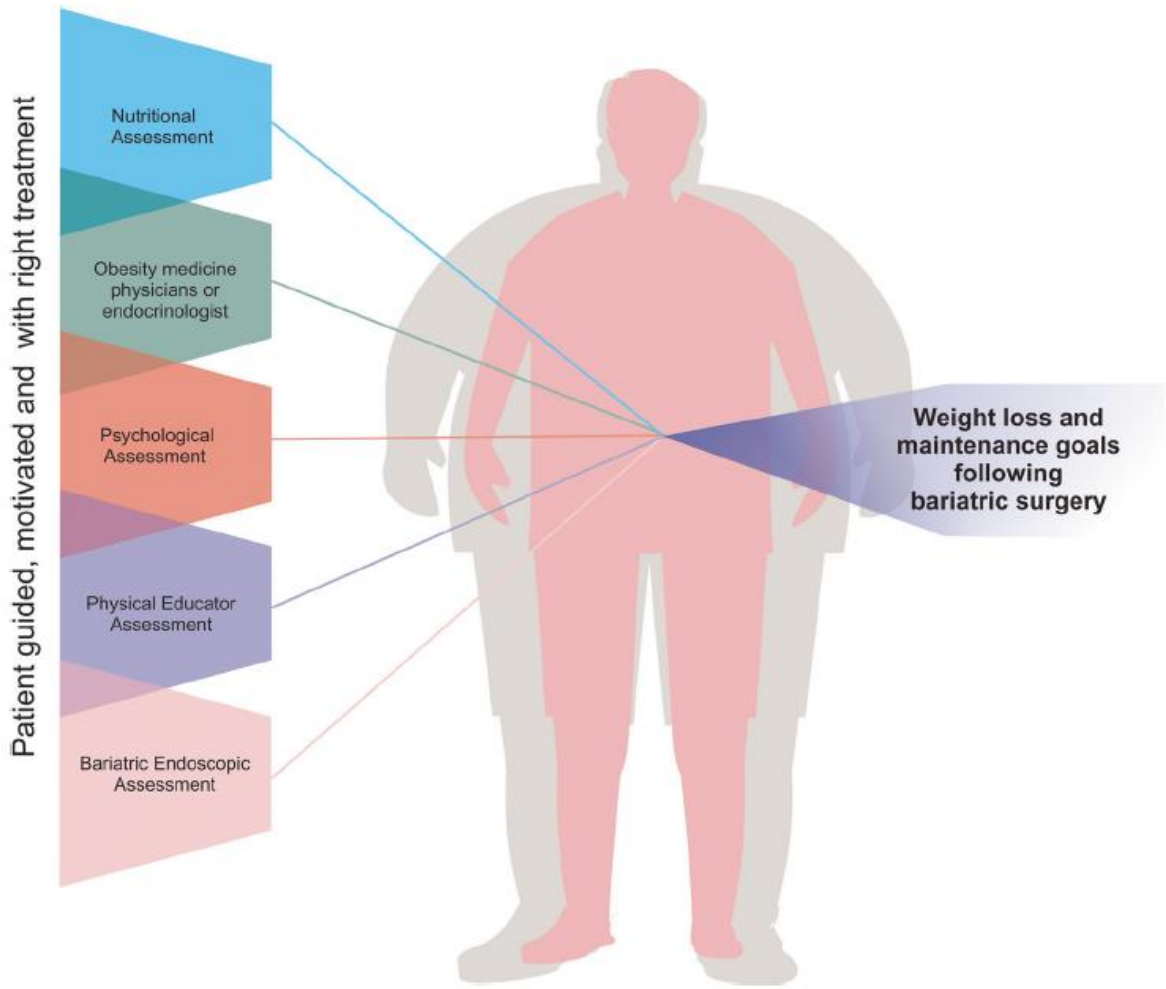
DEFINITIONS

When to think about INSUFFICIENT WEIGHT LOSS?

- % EWL is less than 50%
- BMI is more than 35

* According to the Reinhold criteria



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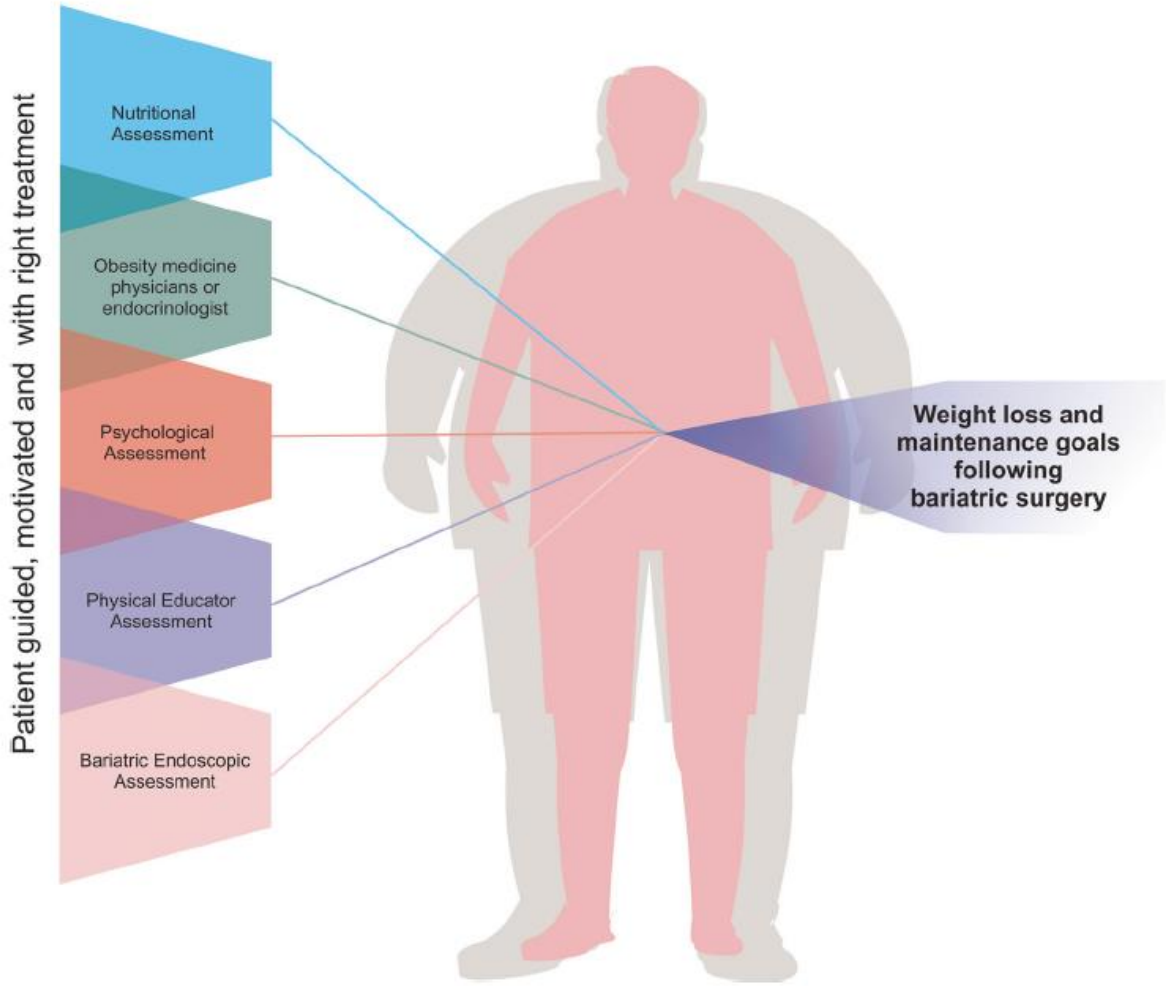
Kim EY, J Metab Bariatr Surg. 2022 Dec;11(2):39-48

DEFINITIONS

When to think about WEIGHT REGAIN?

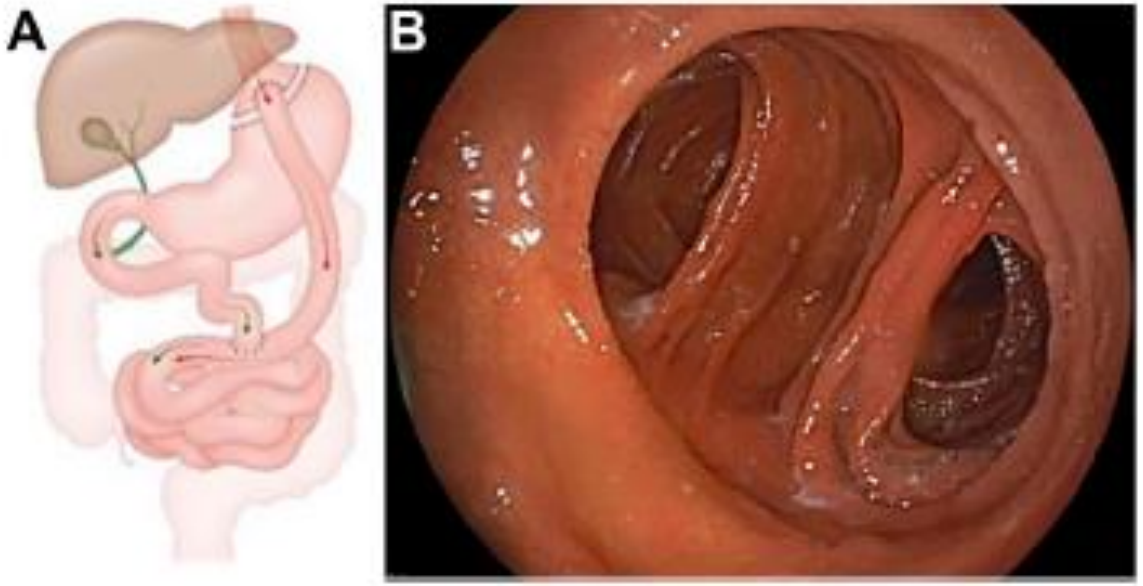
- BMI > 35 kg/m2 after adeguate weight loss
- EWL increase more that 25% from nadir
- Increase > 10 Kg from nadir
- Impossibility to maintain >20% of TBWL after surgery



Cambi MPC et al. Obesity Surgery 2021

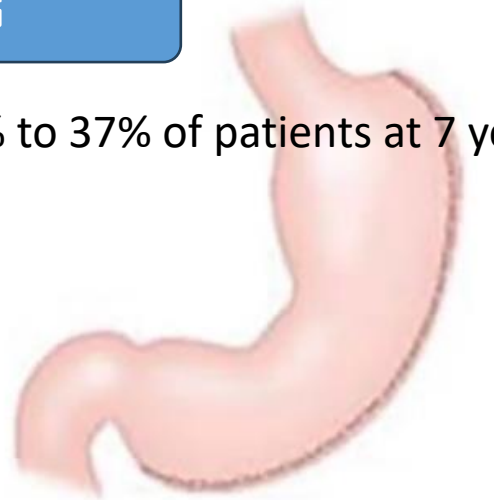
DEFINITIONS

RYGB



20-30% of the weight at ten years after RYGB

LSG

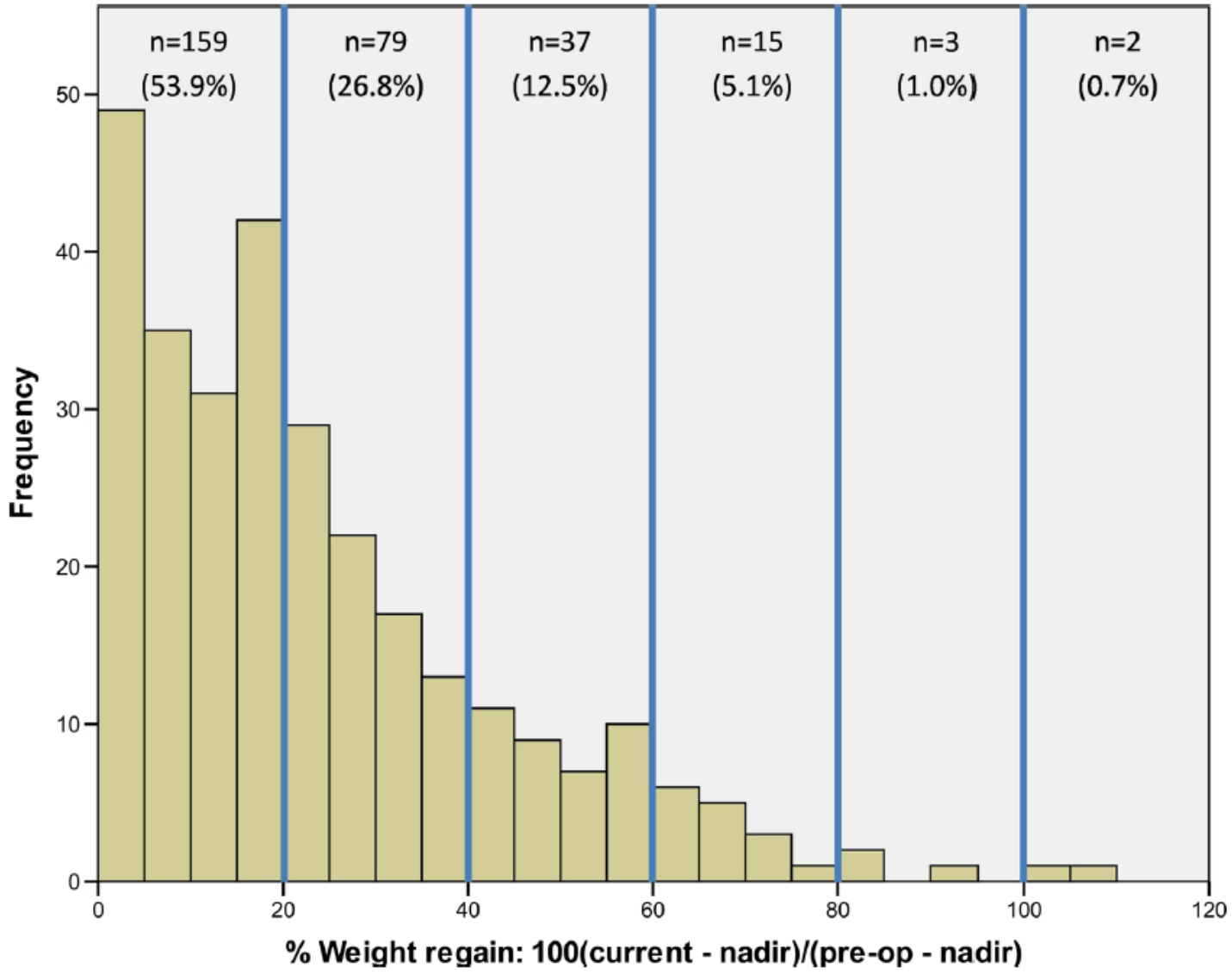


14% to 37% of patients at 7 years of follow-up

Szvarca D & Jirapinyo P. Gastrointest Endosc Clin N Am. 2024 Oct;34(4):639-654.

INTRODUCTION

Fig. 2 Frequency distribution of percent weight regain from nadir weight. Mean (SD) weight regain for all patients was 23.4 %±20.4. Patients are further subcategorized into six cohorts



Cooper T et al. OBES SURG 2025, 1474–1481 (2015).

INTRODUCTION

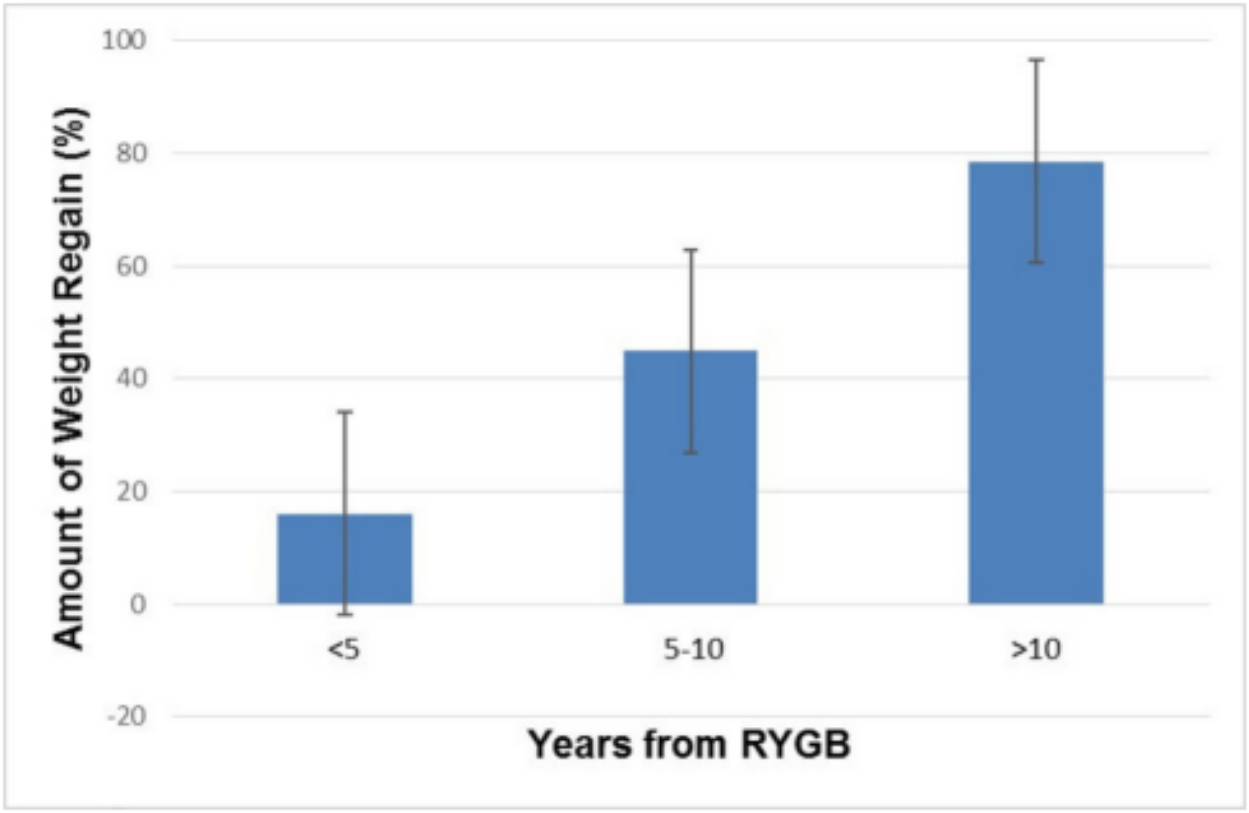


Figure 3 Amount of weight regain in patients who were <5, 5–10 and >10 years post-RYGB. RYGB, Roux-en-Y gastric bypass.

What are the new findings?

- Patients who experience weight regain following RYGB have worse QoL than those whose weights remain stable after surgery.
- Patients who experience weight regain following RYGB have similar QoL as those who have not undergone RYGB despite lower body mass index (BMI).
- Weight regain is a significant negative predictor of QoL after bariatric surgery after controlling for age, BMI and years from RYGB.

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Jirapinyo P, et al. BMJ Open Gastro 2017

FACTORS

Table 1. Consistent correlations with weight loss failure [15]

Consistent correlation	Factors
Positive	Gastro-jejunal stoma diameter, gastric volume following sleeve, anxiety, time after surgery, eating behaviors (sweets consumption, emotional eating, portion size, binge eating, loss of control/disinhibition when eating), genetics.
Negative	Postprandial serum GLP-1 level, eagerness to change physical activity habits, self-esteem, social support, fruit consumption

Kim EY, J Metab Bariatr Surg. 2022 Dec;11(2):39-48

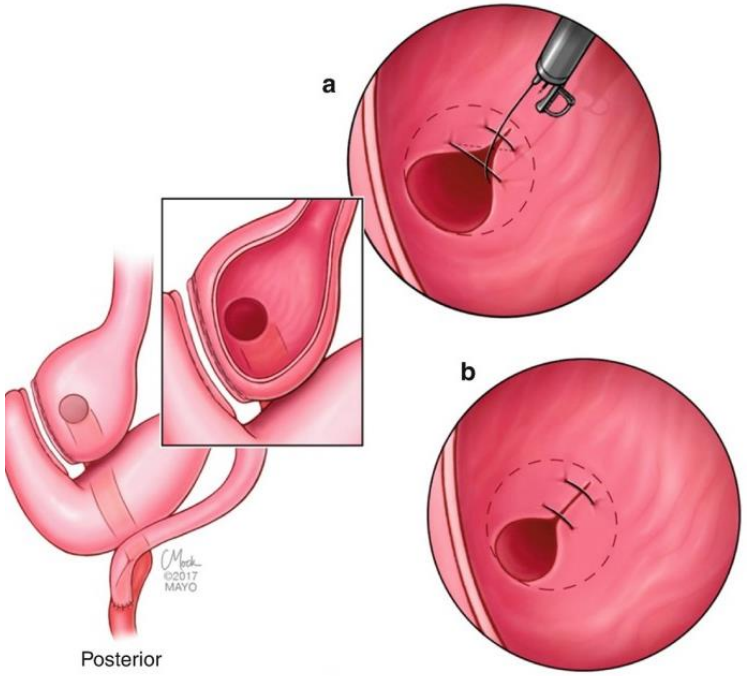
Transoral Outlet Reduction (TORe)

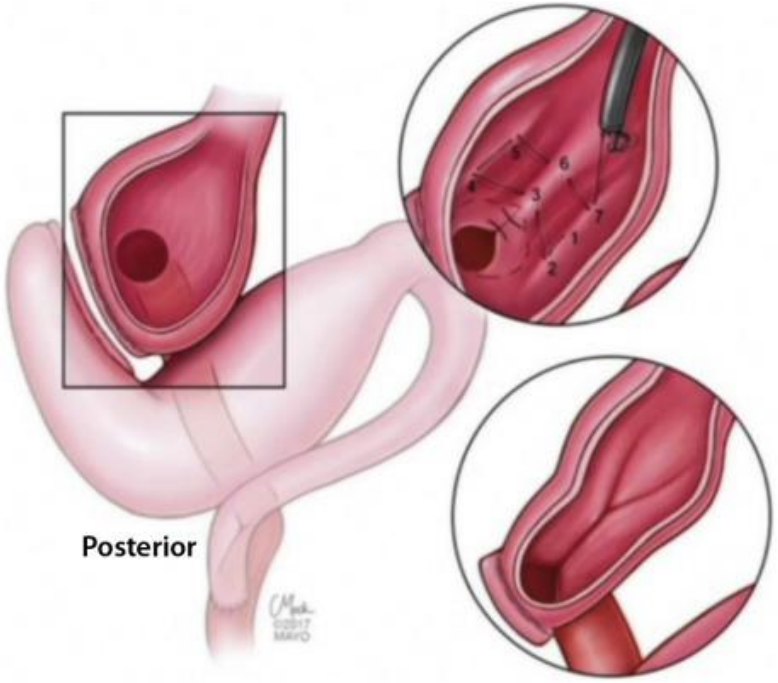
Roux-en-Y gatric bypass (RYGB), is one of the most common bariatric surgical procedures.

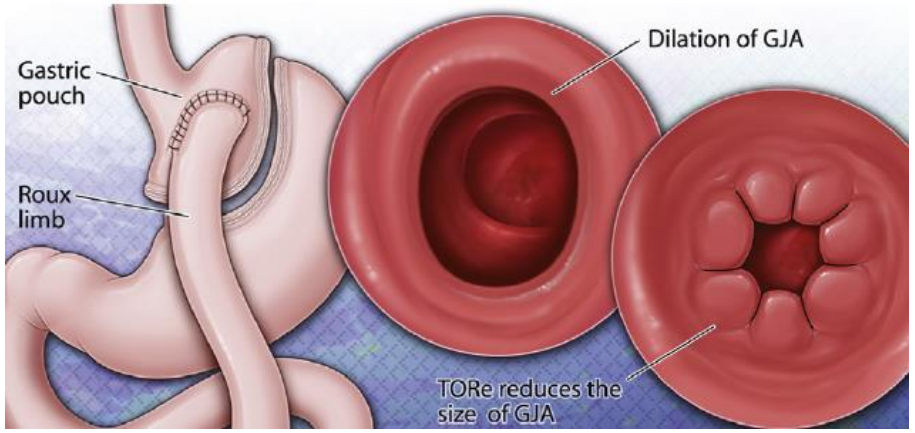
Weight regain → 20-30% of the weight at ten years after RYGB.

FACTORS:

- **LIFESTYLE** → Diet – Sport - Behavior
- **ANATOMICAL** → GJ dilated > 20 mm







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Szvarca D & Jirapinyo P. Gastrointest Endosc Clin N Am. 2024 Oct;34(4):639-654.

Targeting the patients

Regular anastomosis and pouch

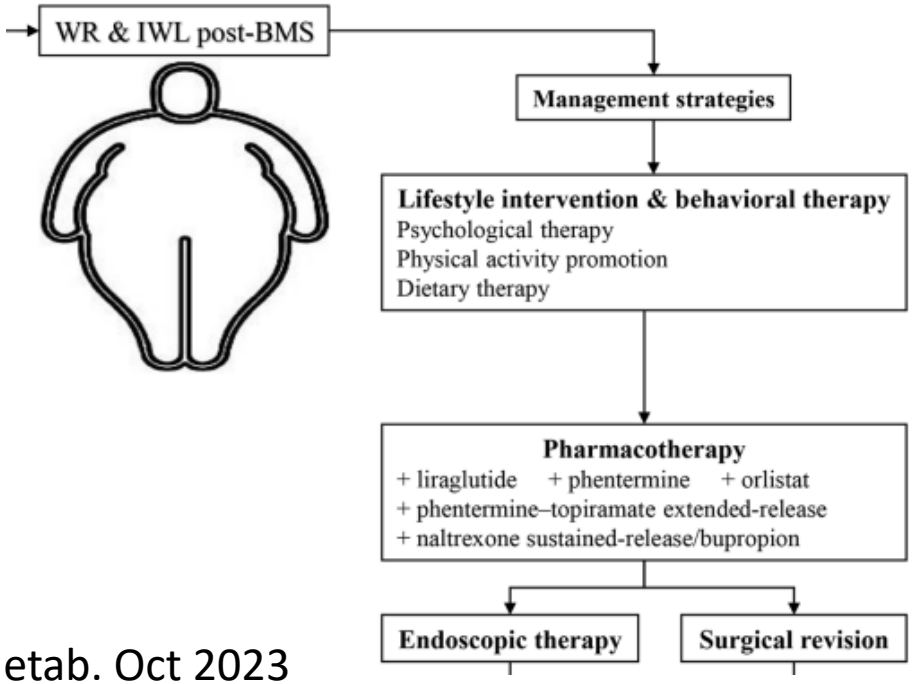
Dilated anastomosis and regular pouch

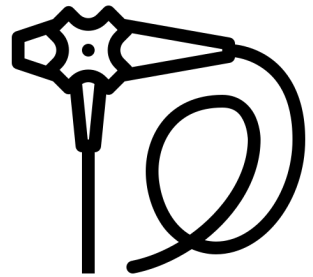
Dilated anastomosis and dilated pouch

Regular anastomosis and dilated pouch

75%

25%





Zefreh H et al. Int J Endocrinol Metab. Oct 2023

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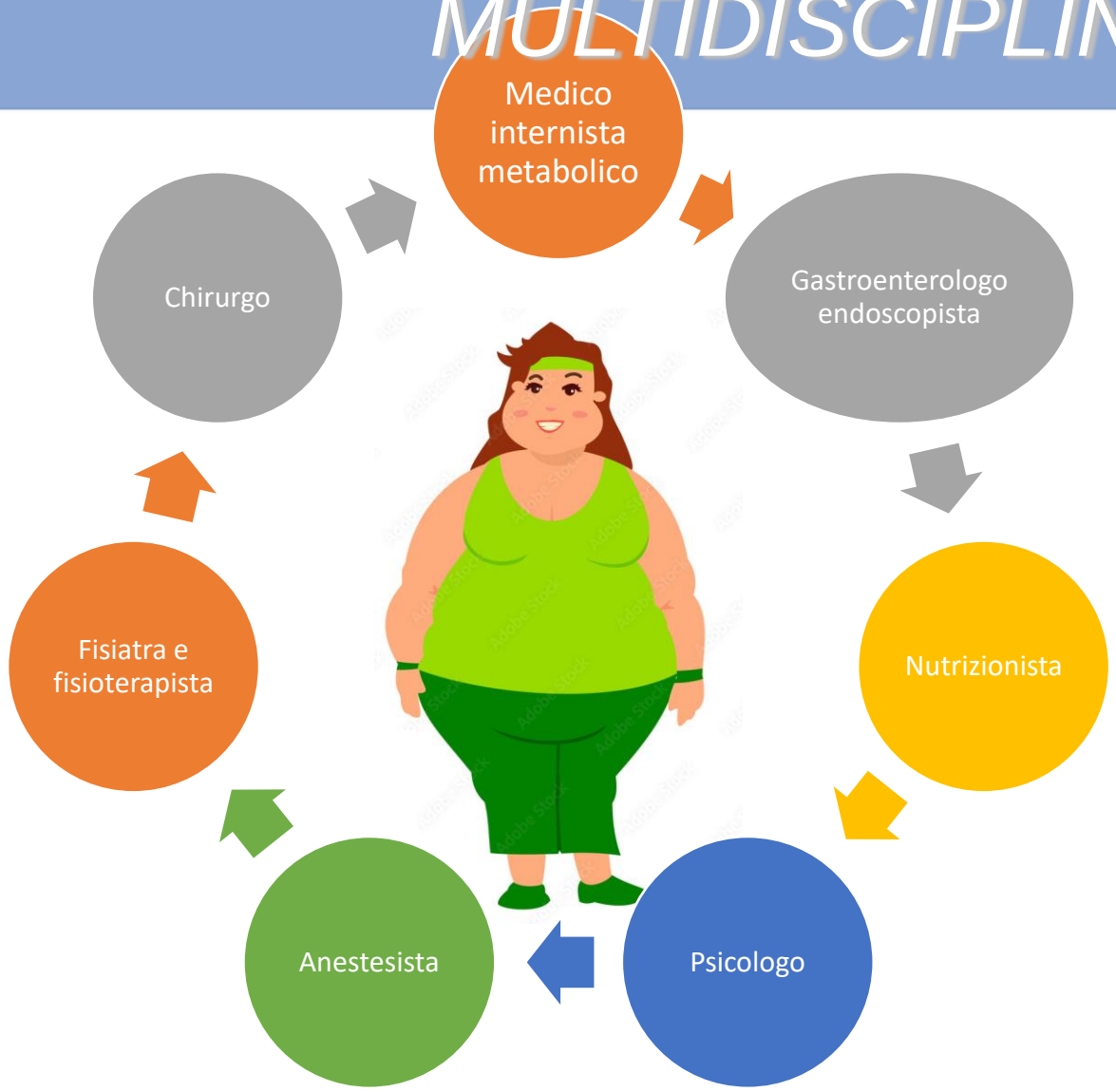
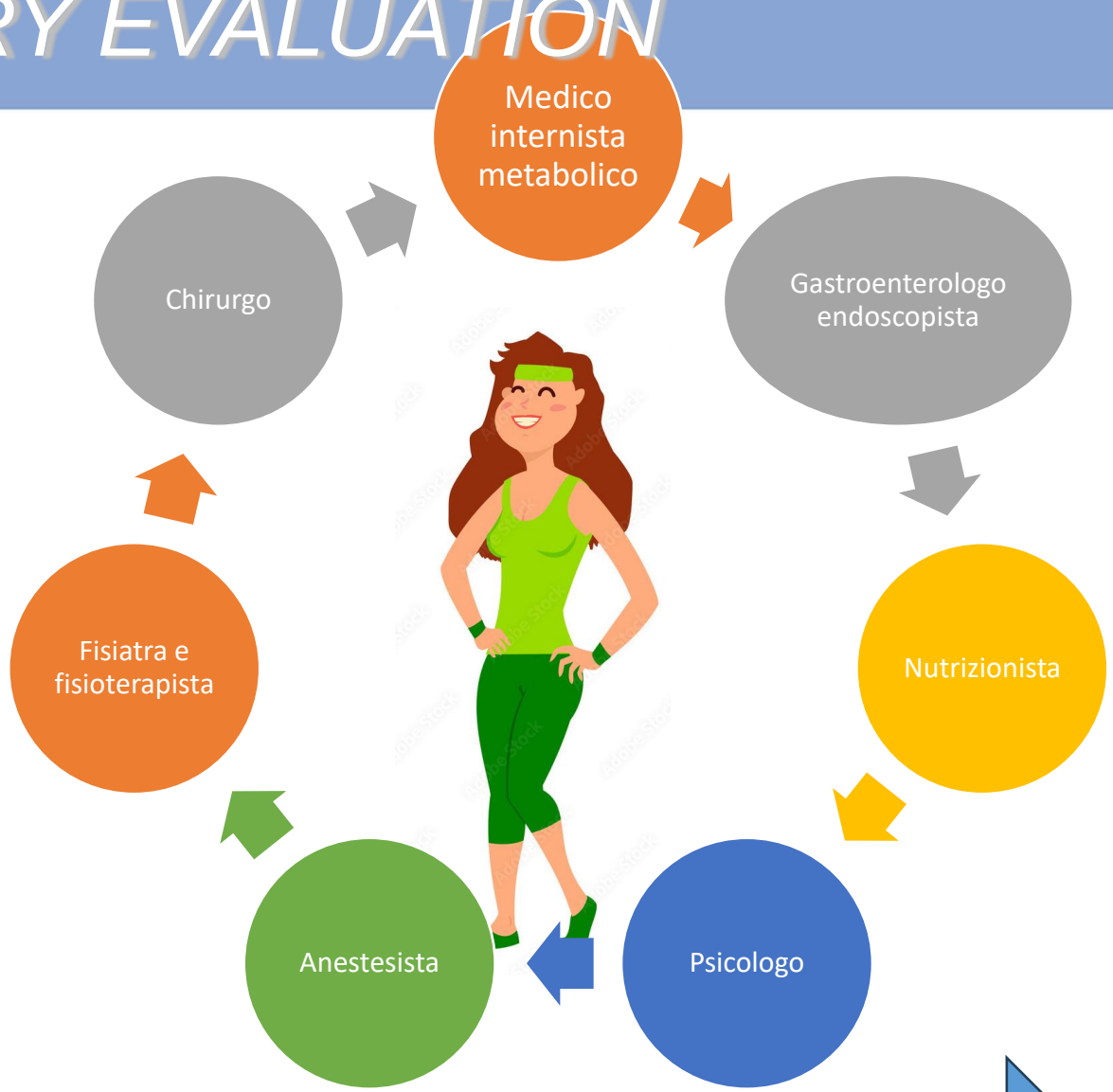
MULTIDISCIPLINARY EVALUATION

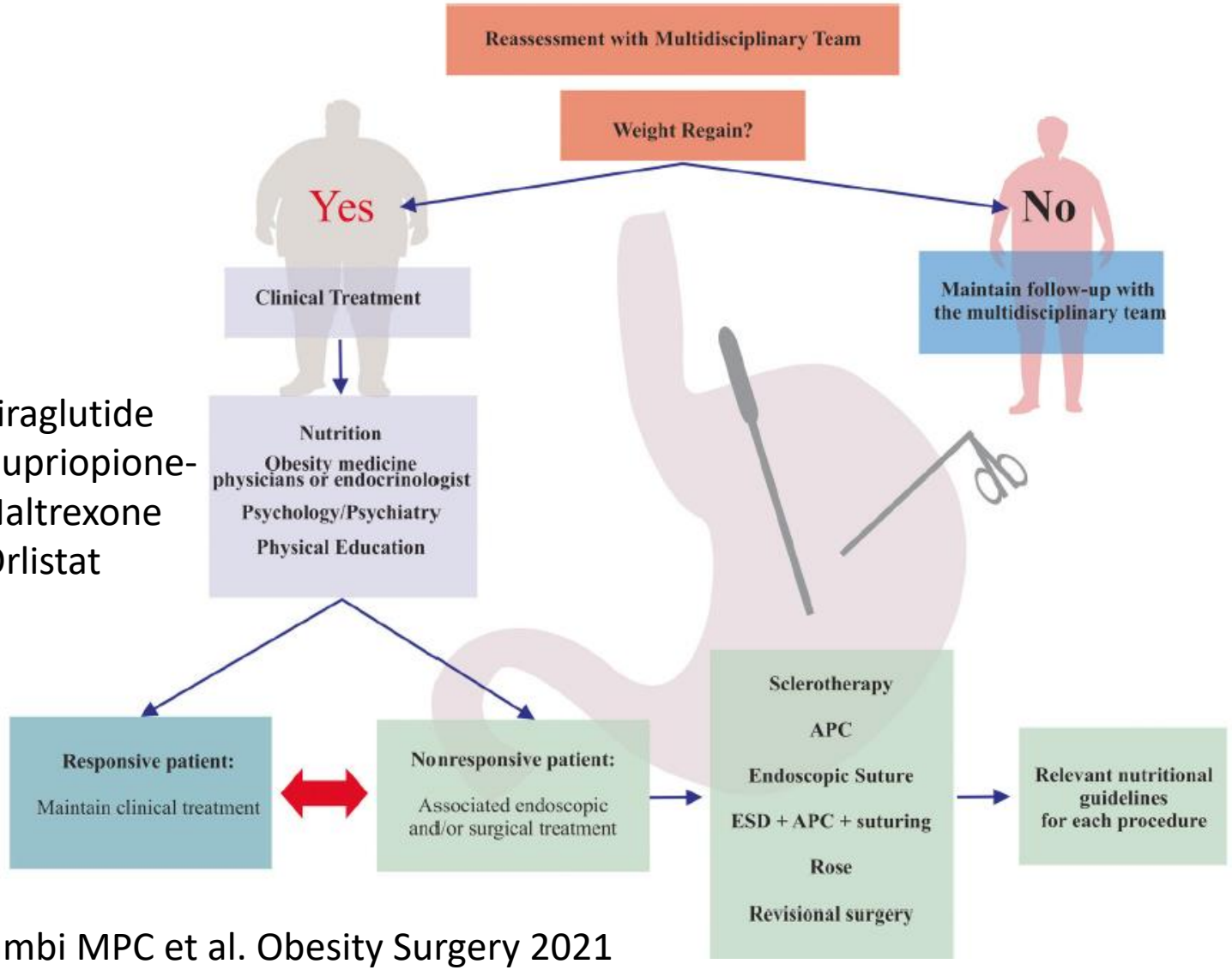




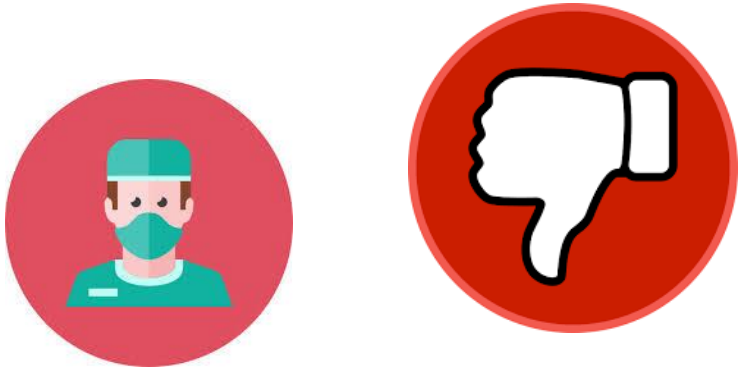
Pre-operative evaluation **BARIATRIC ENDOSCOPY** Follow-up

Szvarca D & Jirapinyo P. Gastrointest Endosc Clin N Am. 2024 Oct;34(4):639-654.
Jaruvongvanich V. et al, Endoscopic Treatment for Obesity and Weight Management Book Chapter, 2020

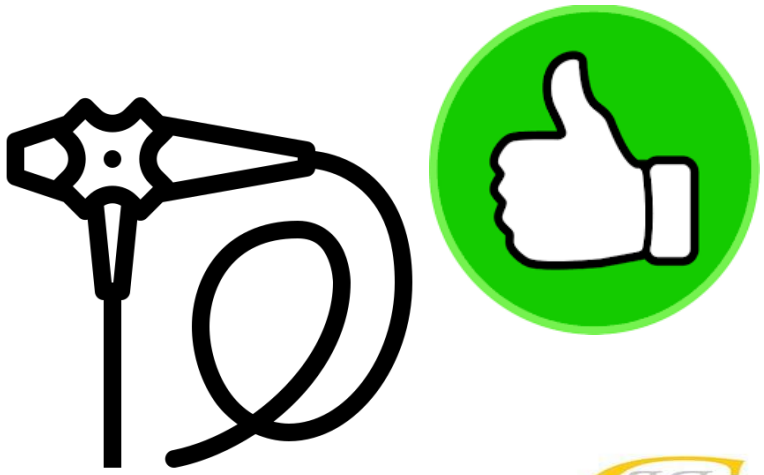
Transoral Outlet Reduction (TORe)



Liraglutide
Bupriopione-Naltrexone
Orlistat



Morbidity and AEs 15-50%
Mortality > 2 times if compared to the primary surgery



Cambi MPC et al. Obesity Surgery 2021
Bulajic M et al. World J Gastrointestinal Surgery 2021

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ENDOSCOPIC TREATMENT: WHY?

ATTRACTIVE:

Minimally invasive (compared to surgery)
Outpatient procedure
Reversible
Repetable

LIMITATION:

Cost?
Durable?

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Kumar, N., de Moura, D.T.H., Thompson, C.C. (2024). In: Thompson, C.C. (eds) Bariatric Endoscopy. Springer

ENDOSCOPIA: equipment

ENDOSCOPIA: equipment

Device per anestesia e assistenza al paziente

ENDOSCOPIA: equipment

Disposizione della sala endoscopica

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ENDOSCOPIA: equipment

Transoral Outlet Reduction (TORe)

Thompson
Peroral endoscopic reduction Introduction
2004

2013
TORe Level I
Transoral outlet reduction
Thompson EndoCinch device
Partial-thickness

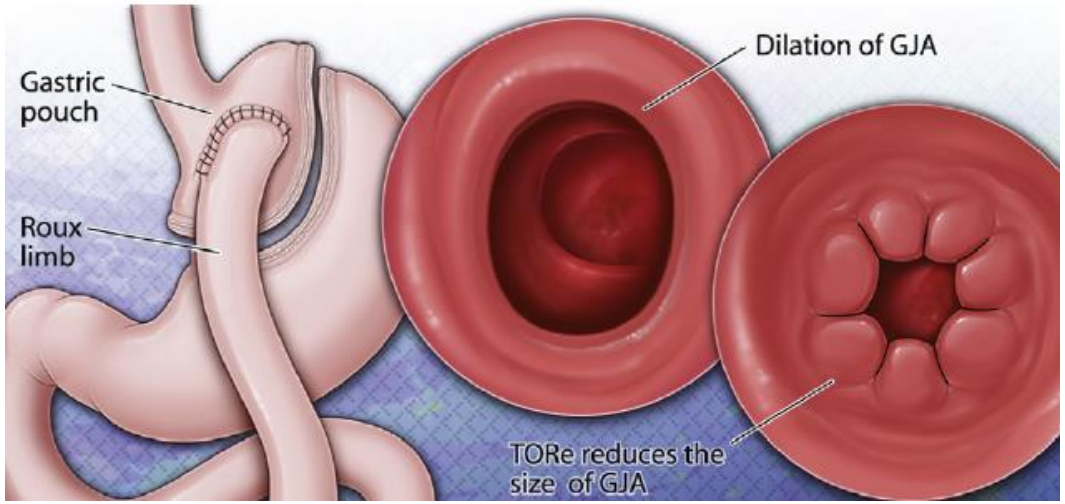
Thompson
OverStitch device
Full-thickness
2014

2017-18
OverStitch device
Interrupted vs Purse-string suture

Jirapinyo
TORe
5 years FU
Durability
2020

2020
Jirapinyo
APC-TORe vs ESD-TORe

Brunaldi trial
Jaruvongvanich
AMPC-TORe vs Ft-TORe
2020



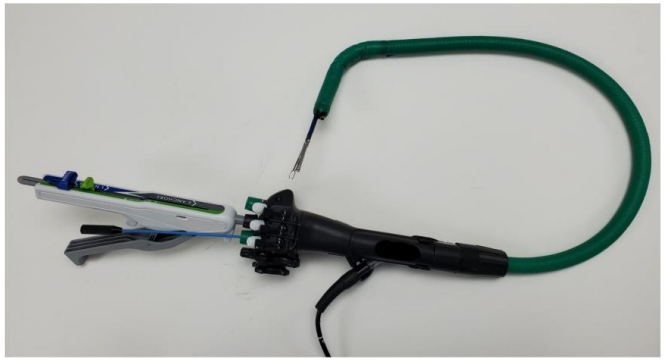
Cambi MPC et al. Obesity Surgery 2021

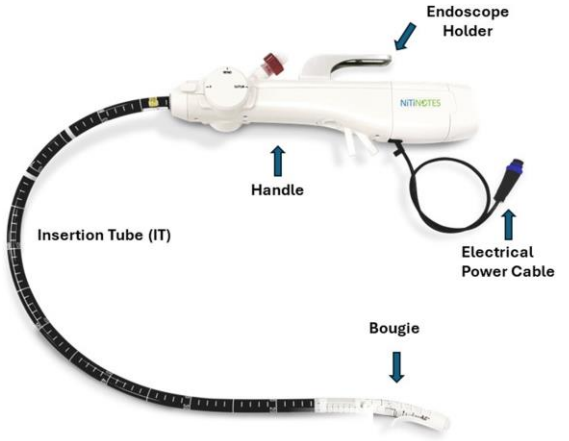
Endoscopic suturing devices

- The advent and widespread availability of a commercially available Endoscopic Ssuturing Systems has led to the creation of novel endoscopic procedures, increasing the field of the interventional endoscopy

Devices

1) **<u>Apollo Overstitch (Apollo Endosurgery)</u>**
2) Endomina (Endo Tools)
3) Pose 2
4) Endozip





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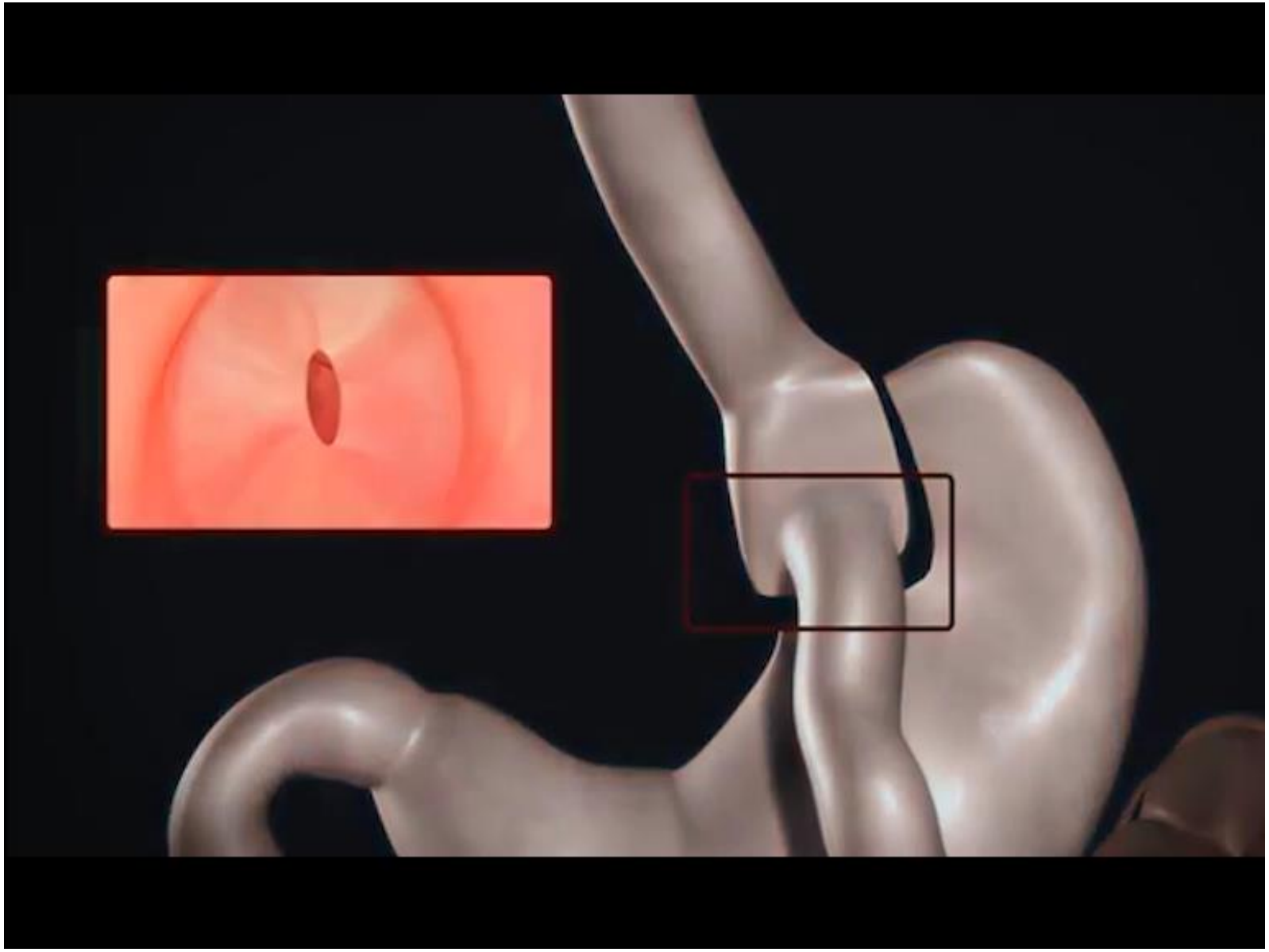
Transoral Outlet Reduction (TORe)



FR-TORe

Full-thickness stiches using endoscopic suturing device (Overstitch, Apollo Endosurgery

Adverse Events are tipically mild/moderate and include:

- Abdominal Pain
- Mucosal Lacerations
- Bleeding

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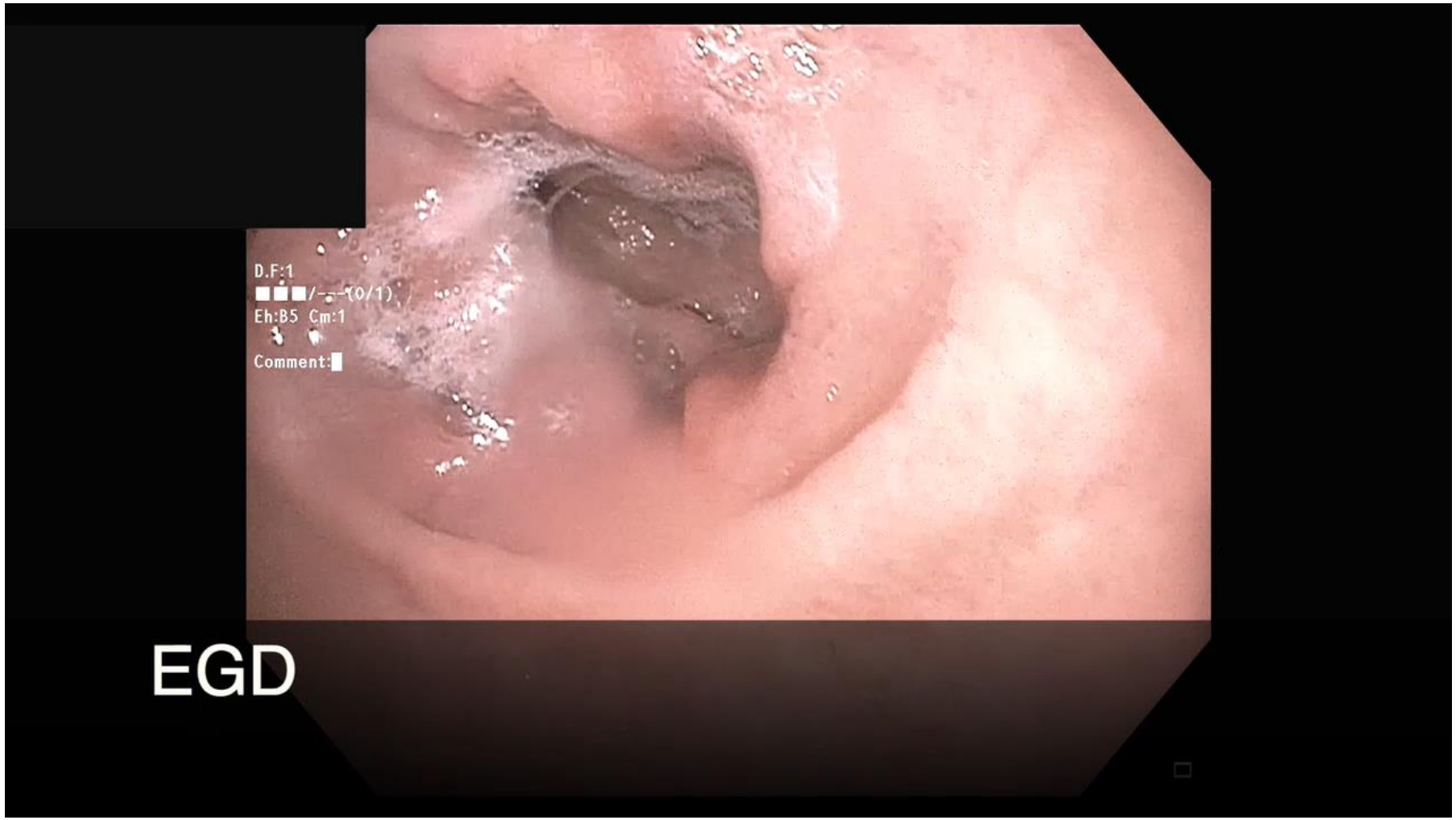
Transoral Outlet Reduction (TORe)

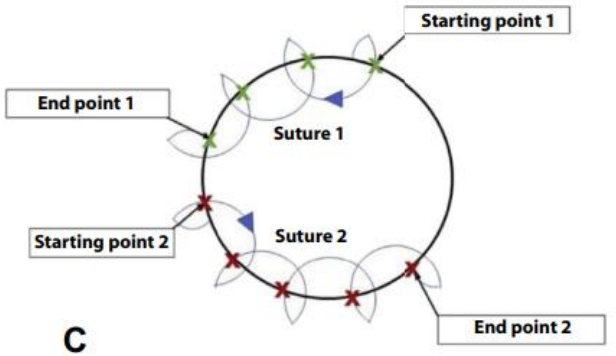


FT-TORe

OverStitch Sx

Therapeutic gastroscope

2 running sutures



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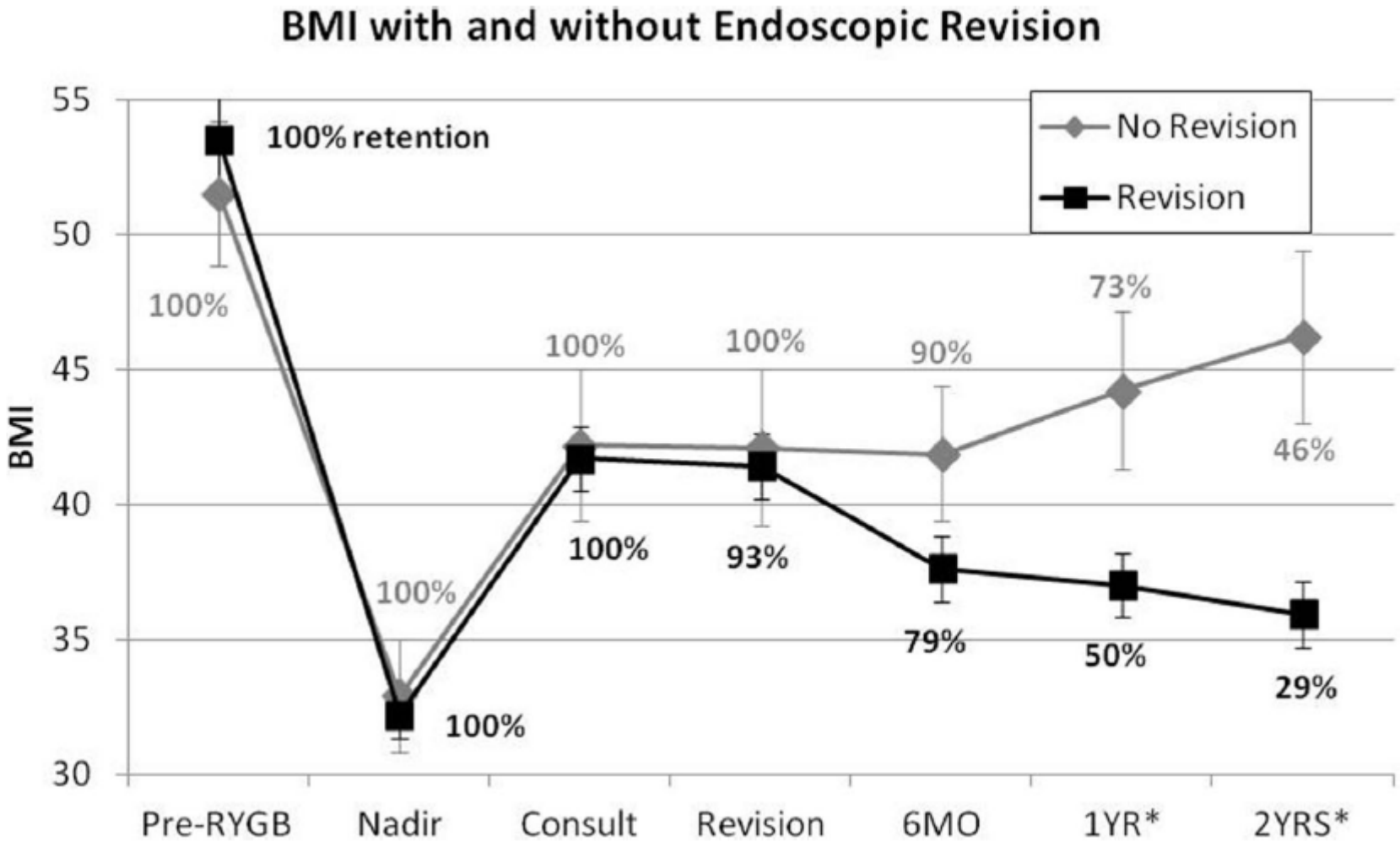
Dawod Q et al. VideoGIE. 2020 Apr

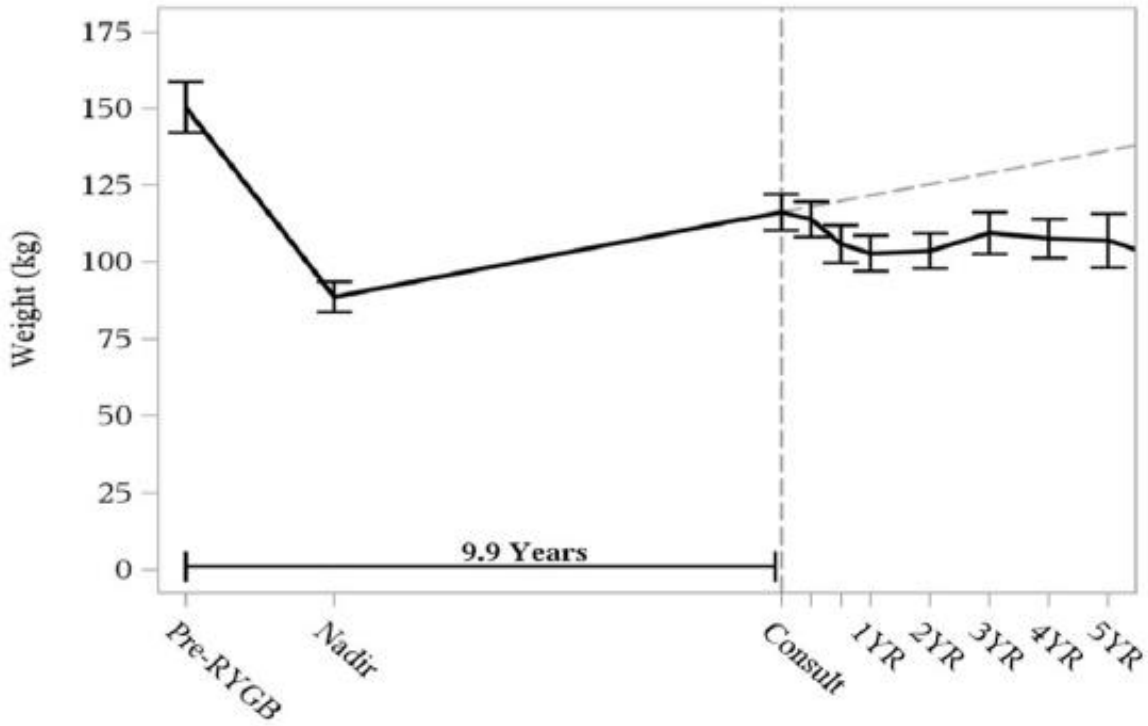
Transoral Outlet Reduction (TORe)

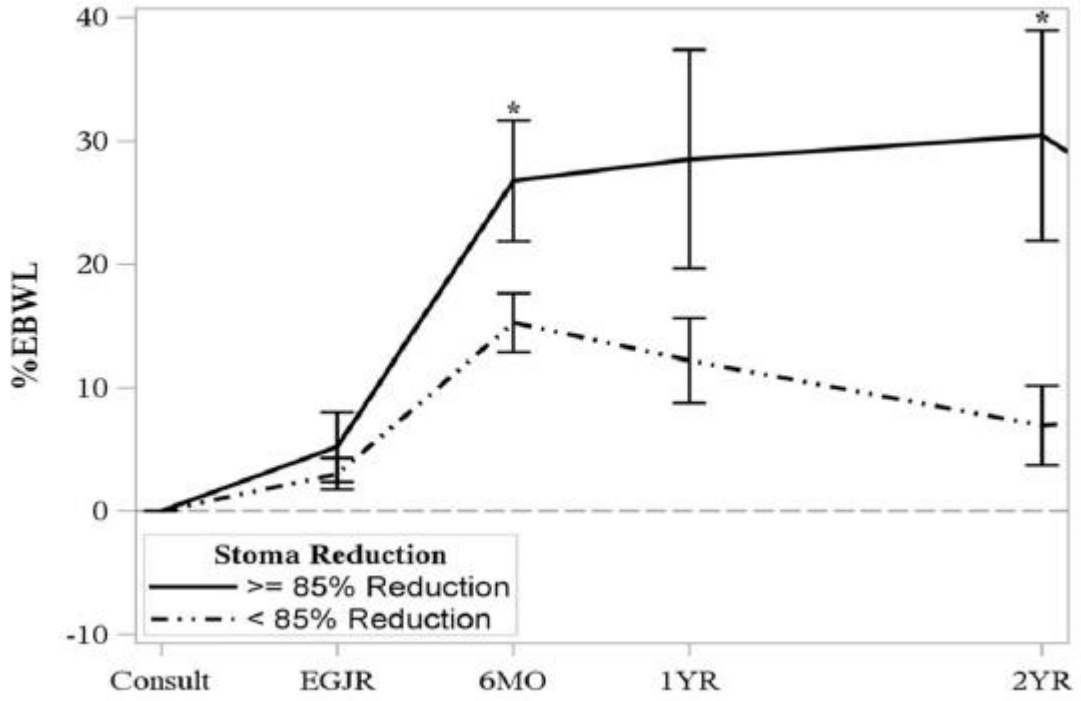
Fig. 2 Means and standard errors of BMI over time; *$p < 0.05$. Percentages next to data points indicate percentage of patients retained in follow-up



Hedberg HM et al. Surg Endosc, 2018

Transoral Outlet Reduction (TORe)

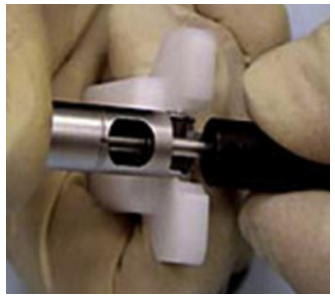


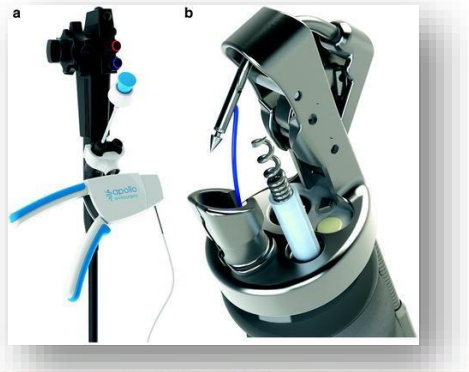


Callahan Z et al. Surg Endosc, 2020

Transoral Outlet Reduction (TORe)

Kumar N et al, 2014 → 59 pt with superficial suture (EndoCinch) vs 59 pt with Apollo OverStitch





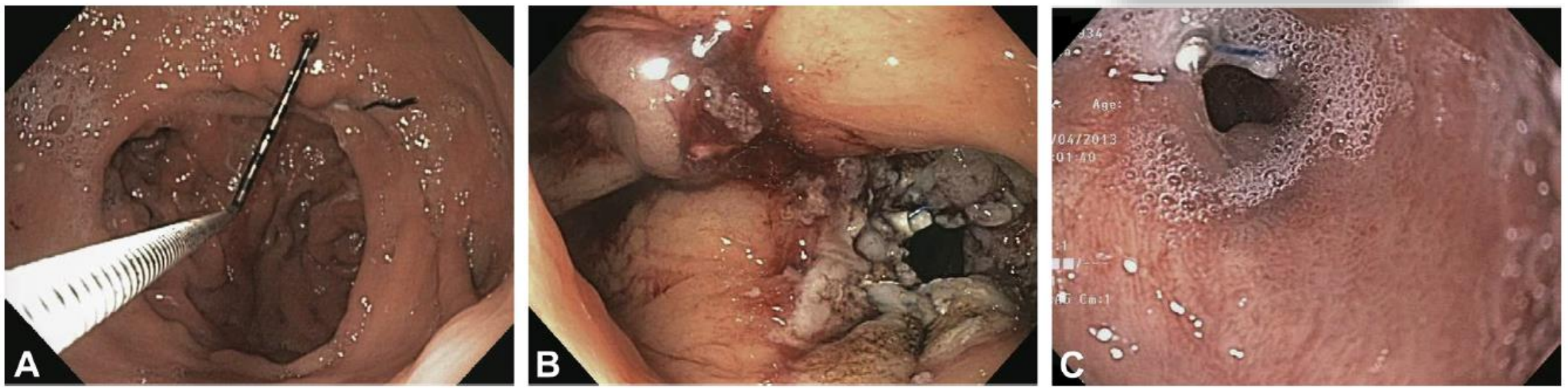


Figure 1. A, Dilated gastrojejunal anastomosis (GJA). **B,** GJA after transoral outlet reduction (TORe) with a full-thickness suturing device. **C,** GJA 6 months after full-thickness TORe.

Kumar N et al. Gastrointestinal Endoscopy 2014

Transoral Outlet Reduction (TORe)

TABLE 1. Baseline characteristics (matched cohort)

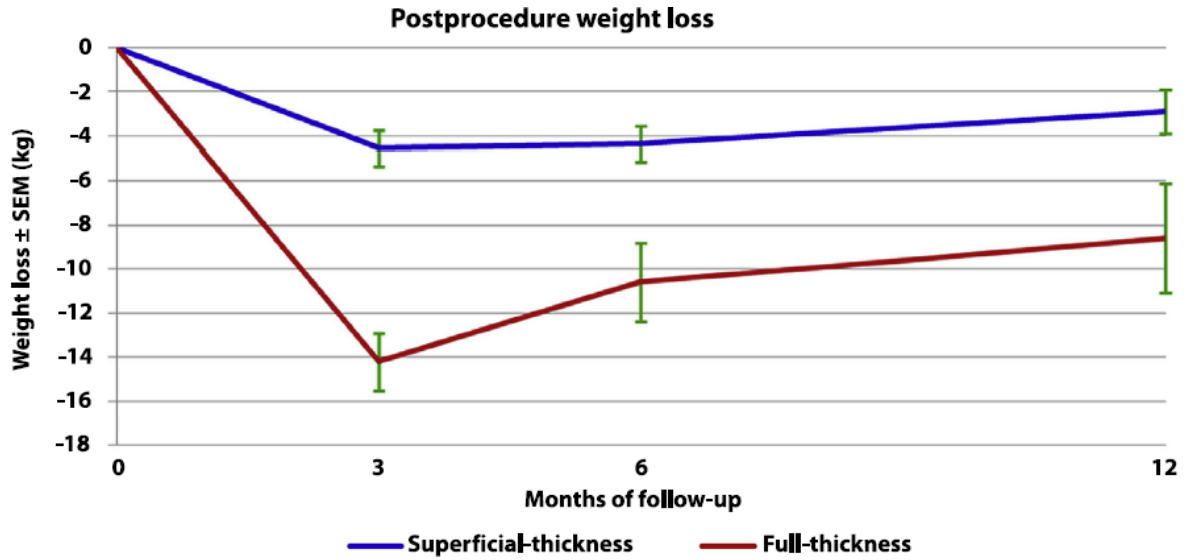
	Superficial (n = 59)	Full-thickness (n = 59)	*P* value
Sex,* no.	3 M/56 F	15 M/44 F	< .01
Age, y	48.8 ± 1.1†	49.9 ± 1.3	.52
Diabetes mellitus, %	17.2	23.7	.49
Lost weight regained, %	32.5 ± 3.0	40.9 ± 3.2	.06
Weight regained, kg	18.7 ± 1.8	18.6 ± 1.5	.97
Before TORe BMI	40.4 ± 1.0	41.1 ± 1.3	.67
Before TORe GJA, mm	24.3 ± 0.8	24.8 ± 0.9	.68
Before TORe pouch, mm	51.8 ± 1.5	49.7 ± 2.4	.46

M, Male; *F,* female; *TORe,* transoral outlet reduction; *BMI,* body mass index; *GJA,* gastrojejunal anastomosis.
*Statistical significance.
†(Mean ± SEM)

TABLE 3. Procedure characteristics

	Superficial (n = 59)	Full-thickness (n = 59)	*P* value
Total stitches	3.5 ± 0.1*	3.8 ± 0.2	.18
Stitches, GJA†	3.3 ± 0.1	2.5 ± 0.2	< .01
Stitches, pouch†	0.3 ± 0.1	1.2 ± 0.2	< .01
After-TORe GJA, mm	6.9 ± 0.2	7.1 ± 0.3	.58
After-TORe pouch, mm	48.6 ± 2.0	46.4 ± 2.1	.45

GJA, Gastrojejunal anas
*(Mean ± SEM)
†Statistical significance.



Kumar N et al. Gastrointestinal Endoscopy 2014

Transoral Outlet Reduction (TORe)

Kumar N et al, 2016 → n: 150 patients , found that the mean TBWL was:

- At 1 year: 10.5 ± 1.2 Kg;
- At 2 year: 9.0 ± 1.7 Kg;
- At 3 year: 9.5 ± 2.1 Kg

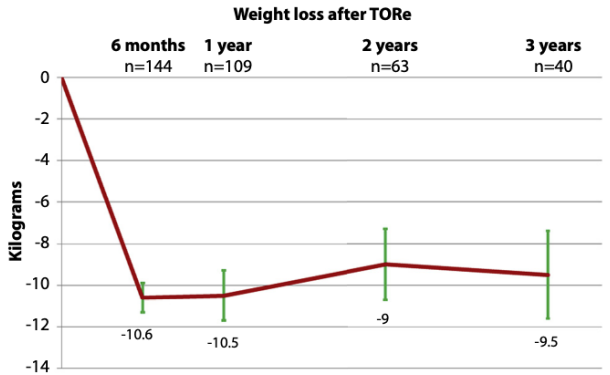


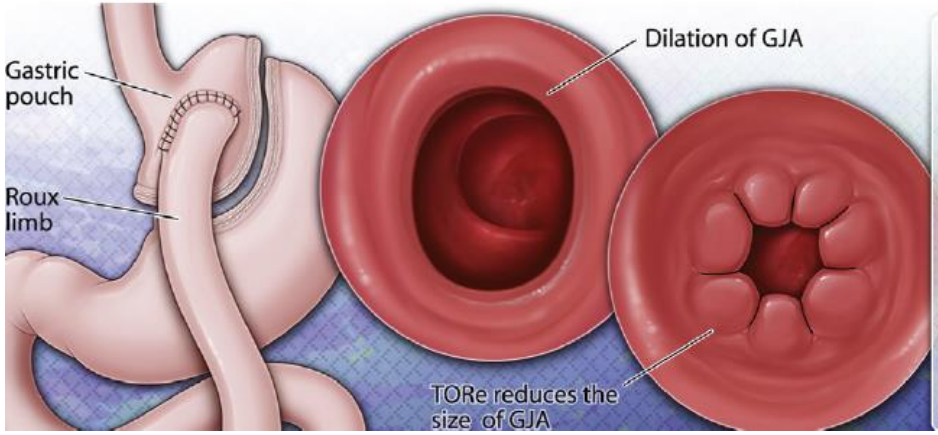
Figure 2. Weight loss trend. *TORe*, transoral outlet reduction.

Jirapinyo P et al, 2020 → 331 patients with baseline BMI of 40 ± 9 kg/m2

- Efficacy at 5 years: 8.8% TBWL (62% maintained 5% TWL)
- TORe successful at preventing weight gain in 77% of cohort

TABLE 2. Total weight loss with and without pouch reduction

	No pouch reduction	Pouch reduction	*P* value
12 mo	6.7 ± 1.5	9.9 ± 1.2	.10
24 mo	9.6 ± 2.4	6.5 ± 1.7	.28
36 mo	7.5 ± 2.3	7.2 ± 2.1	.94



Kumar N et. al. Gastrointestinal Endoscopy 2016
Jirapinyo P et al. Gastrointestinal Endoscopy 2020

Ft-TORe with APC: outcomes

Meta-analysis with 26 studies and 1148 patients:

- 320 patients ft-TOre + APC
- 828 patients ft-TOre alone

FT-Tore + APC vs FT-Tore
24.2% vs 11.7% EWL, P<.001

Fig. 3 Mean absolute weight loss after full-thickness endoscopic suturing to treat weight regain

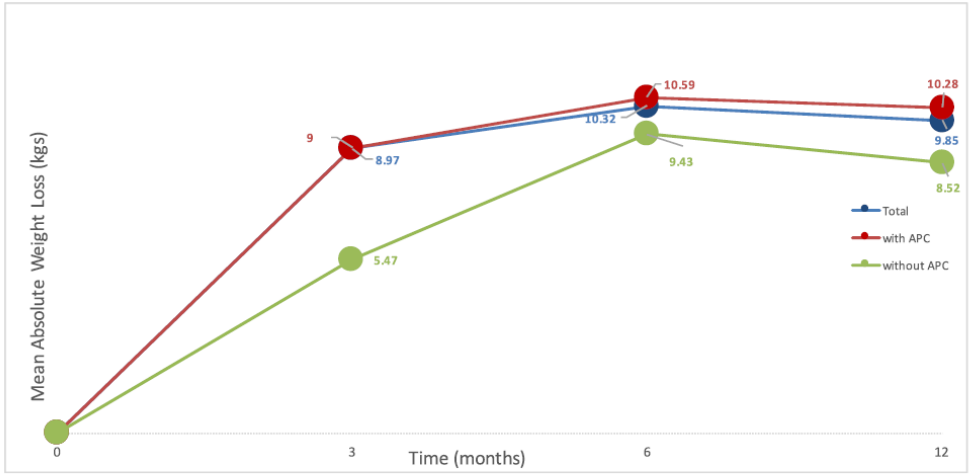
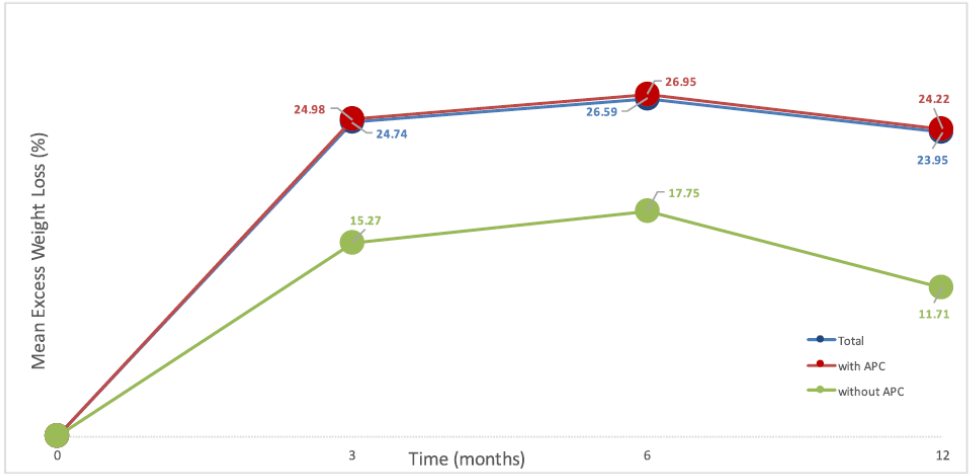


Fig. 4 Mean excess weight loss after full-thickness endoscopic suturing to treat weight regain



Brunaldi VO et al. Obesity Surgery, 2018

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Ft-TORe with APC: outcomes

Long-term outcomes of Transoral Outlet Reduction for dumping syndrome and weight regain after Roux-en-Y gastric bypass.

METHODS

87 patients with weight regain and/or dumping syndrome (DS) after RYGB

Gastro-Jejunal Anastomosis (GJA) enlargment

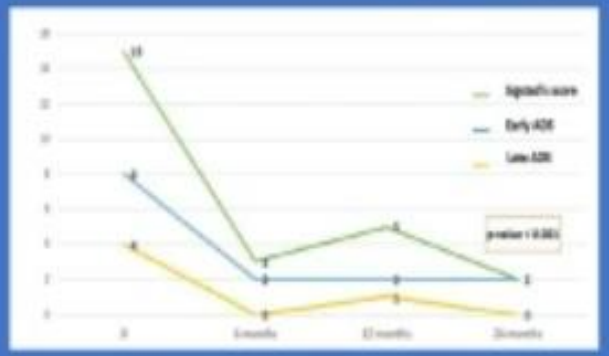
AWL
TBWL%
EWL%

Sigstad's score

Arts Dumping score (early & late)

Follow-up: 6, 12, 24 months

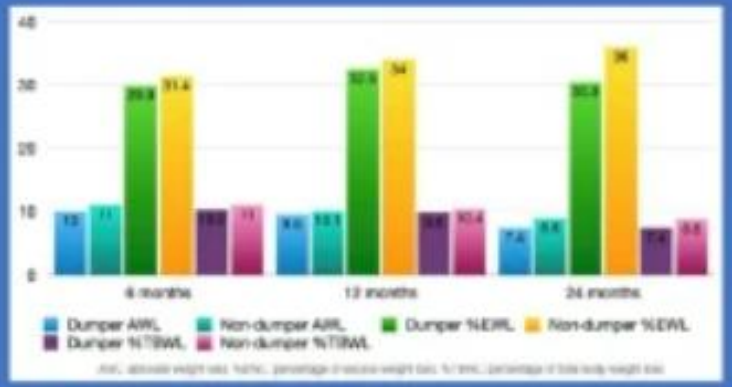
RESULTS



Resolution of DS (Sigstad's score <7): 68.9%, 66.7%, and 57.2% at 6, 12 and 24 months

↓↓↓Sigstad's score as and early and late ADS ($p < 0.001$)
24 months

Significant WL for both "Dumper" and "Non-Dumper" patients



Severe Adverse Events: 1.1%

CONCLUSIONS

- TORe is a minimally invasive treatment for both weight regain and dumping syndrome after RYGB refractory to medical therapy
- TORe is safe and effective up to 2 years
- A multidisciplinary evaluation is mandatory both in patient selection & follow-up

Pontecorvi V et al. Obes Surg. 2023 Apr.

Ft-TORe with APC: outomes

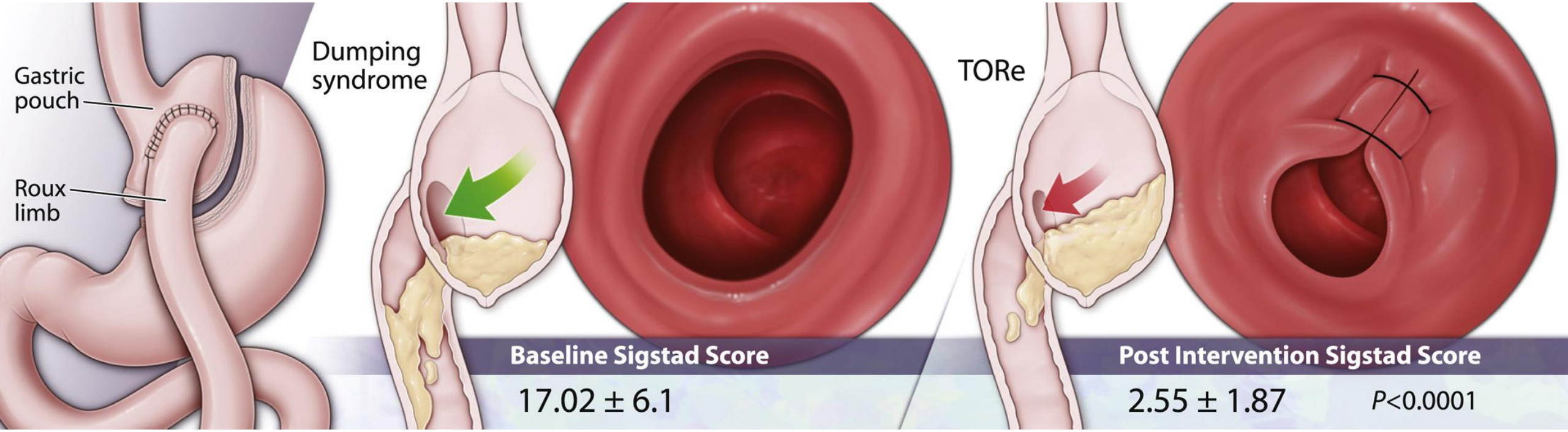


TABLE 3. Postintervention results

Variable	At 3 months	Mean difference	*P* value
Sigstad score	2.55 ± 1.87	−14.5 ± 5.5	<.0001
Weight, kg	89.4 ± 1.96	−9.3 ± 3.8	<.0001

Values are mean ± standard deviation.

Vargas EJ et al. Gastrointest Endosc. 2020 Jul

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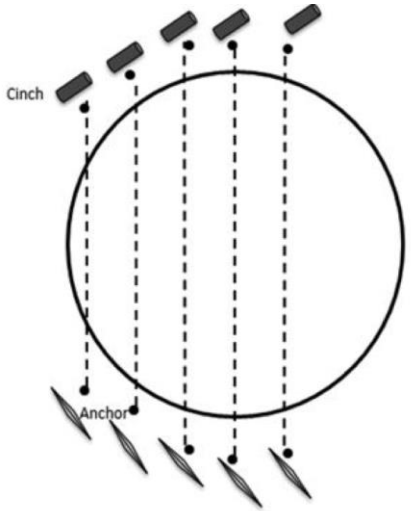
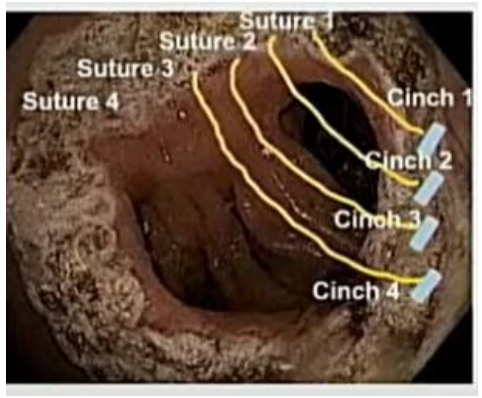
Suture patten in TORe

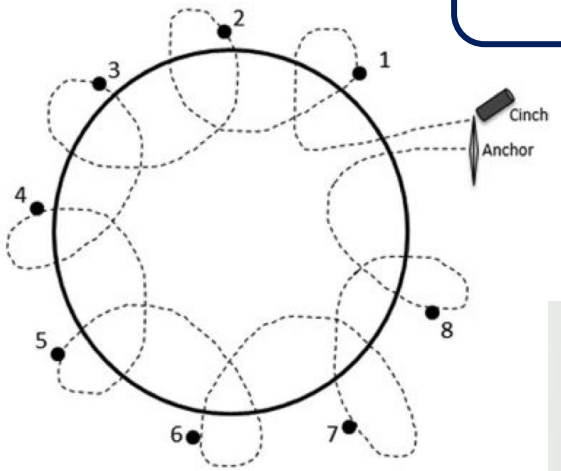
Interrupted stitch vs Purse-string

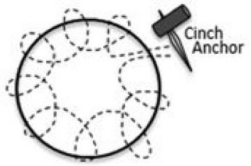
Improvement at 12 months
EWL 11.7% vs 19.8% (p<0.001)
TBWL 6.4% vs 8.6% (p0.02)

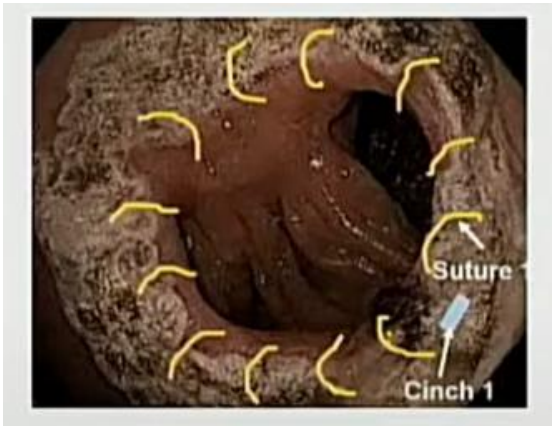




Interrupted stitches until size <=12 mm







Single purse-string suture from 3 o'clock, counterclockwise
Hydrostatic ballon to 8-12 mm → Suture tightened

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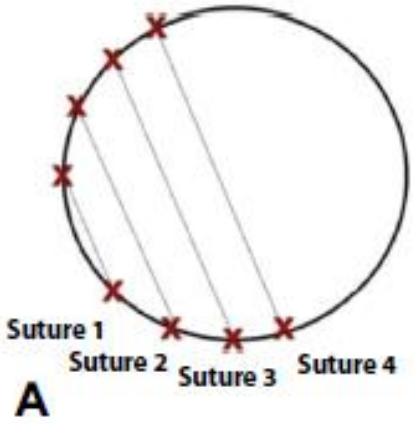
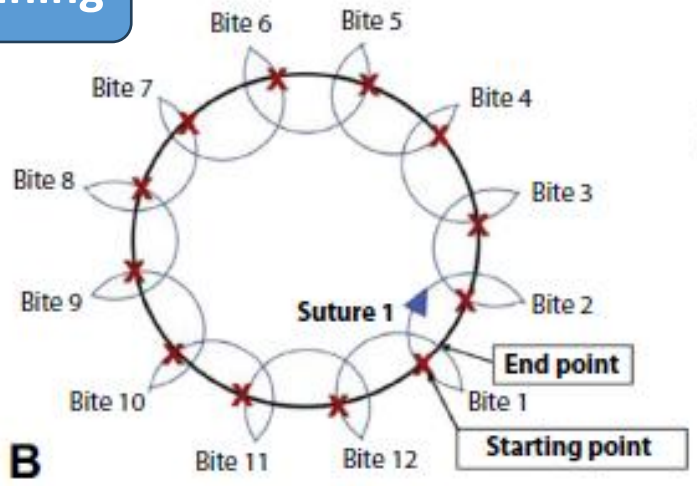
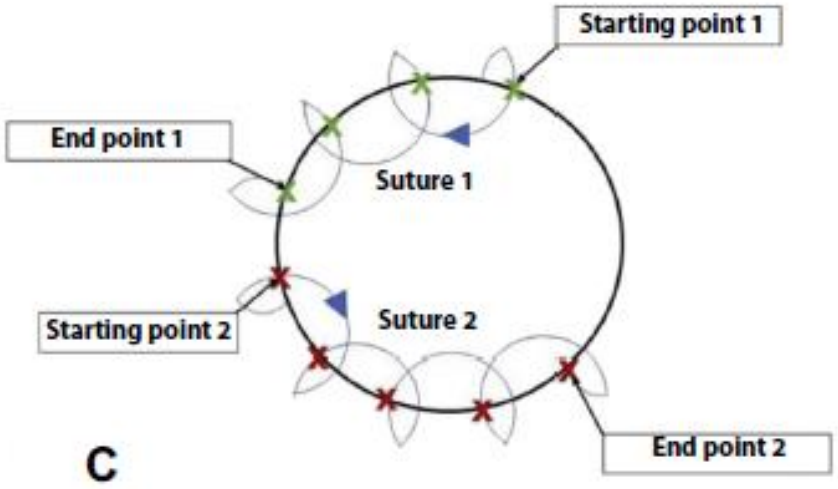
Schulman A et al. Gastrointestinal Endoscopy 2018

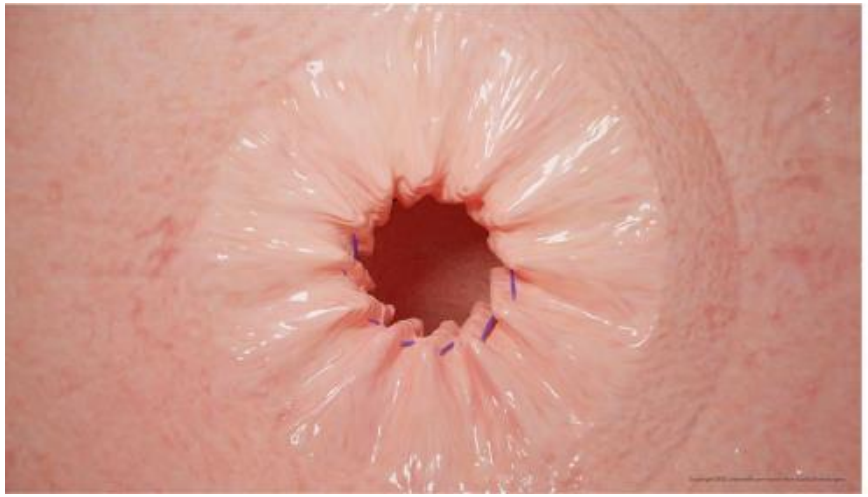
Suture patten in TORe

Interrupted stitch, Purse-string and running









Single purse-string suture from 3 o'clock, counterclockwise
Hydrostatic ballon to 8-12 mm → Suture tightened

Deng J A et al. Foregut. 2024;4(2):200-204.
Jirapinyo P et al. Gastrointestinal Endoscopy 2020

Transoral Outlet Reduction (TORe)

TORe purse-string versus interrupted stitch technique — Schulman et al

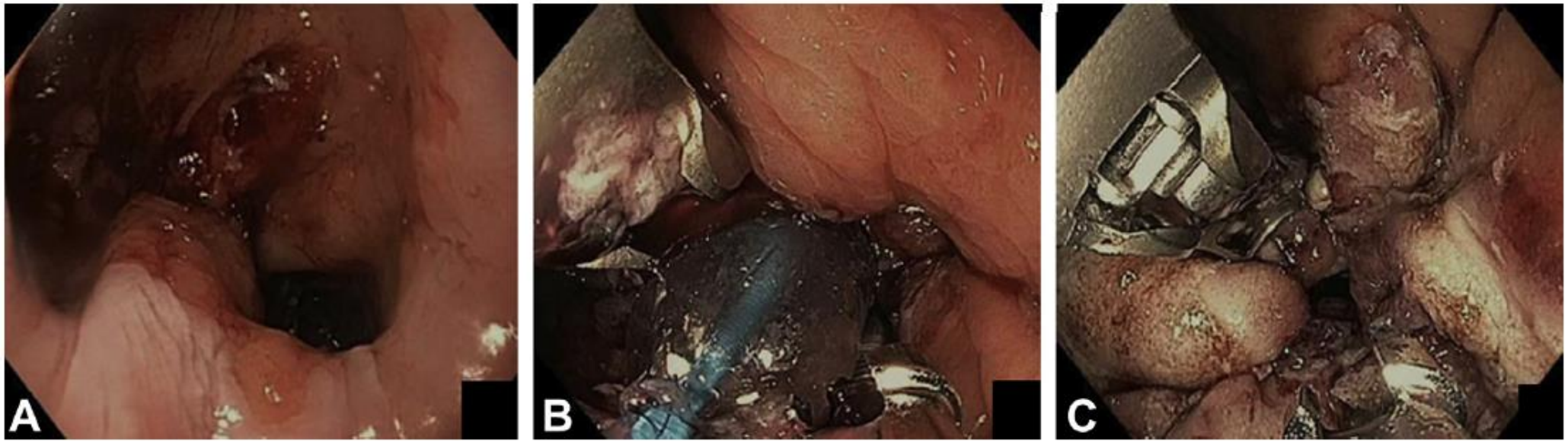


Figure 4. Transoral outlet reduction following an interrupted suture pattern (**A**) or purse-string pattern which requires suture tightening and cinching over a balloon (**B**) followed by balloon withdrawal (**C**).

Schulman A et al. Gastrointestinal Endoscopy 2018

Suture patten in TORe

TABLE 2. Procedure characteristics and outcome differences between patients undergoing interrupted versus purse-string suturing patterns

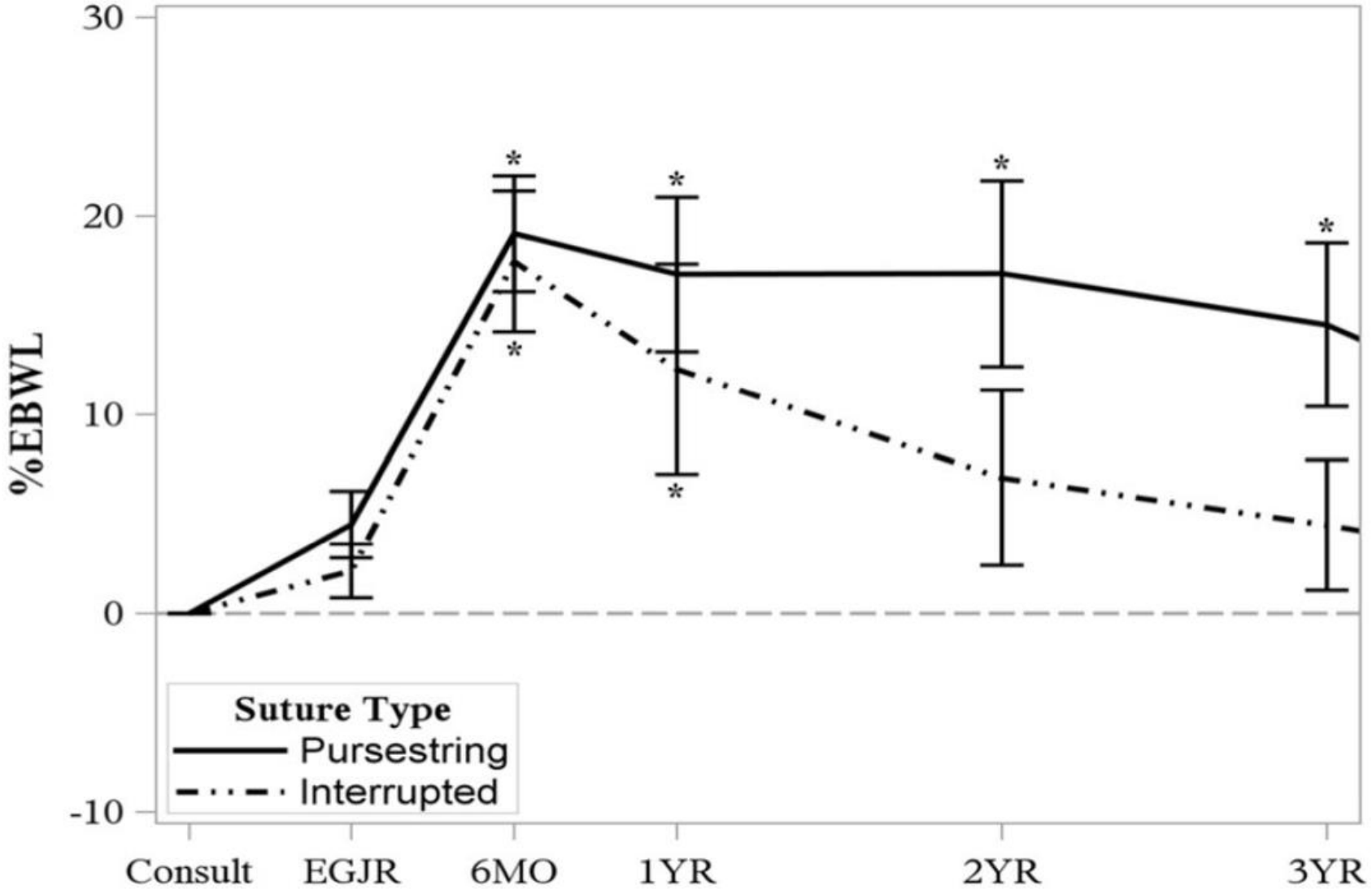
	Interrupted group (n = 48 at 3 mo, n = 44 at 12 mo)	Purse-string group (n = 164 at 3 mo, n = 131 at 12 mo)	*P* value
Stitches, GJA	9.7 ± 5.6	8.7 ± 2.8	.70
Percent total weight loss			
3 mo	8.0 [6.5, 9.4]†	8.6 [6.8, 9.4]	.41
12 mo	6.4 [4.7, 8.1]	8.6 [7.3, 9.4]	.02*
Percent excess weight loss			
3 mo	16.7 [11.0, 21.3]	20.5 [18.0, 23.0]	.39
12 mo	11.7 [5.8, 20.0]	19.8 [16.4, 23.0]	<.001*
Total weight loss, kg			
3 mo	11.3 [6.7, 17.7]	9.5 [8.6, 10.5]	.32
12 mo	7.8 [5.5, 9.3]	9.5 [7.7, 11.2]	.04*
Percent regained weight lost			
3 mo	33.3 [23.5, 56.0]	44.7 [24.5, 65.1]	.56
12 mo	27.8 [11.4, 60.0]	40.2 [31.9, 48.5]	.02*

GJA, Gastrojejunal anastomosis.
*Denotes $P < .05$.
†Median ± [25th, 75th interquartile range]

- Patients n → 241
- Superiority of purse-string (vs interrupted) in terms of weight loss.
- No statistical differences at 3 months, but after 1 y (more durable approach?)
- Purse-string TORe technique was superior to the original interrupted TORe suture pattern with the efficacy of 8.6% versus 6.4% TWL at 12 months, respectively (P .02).

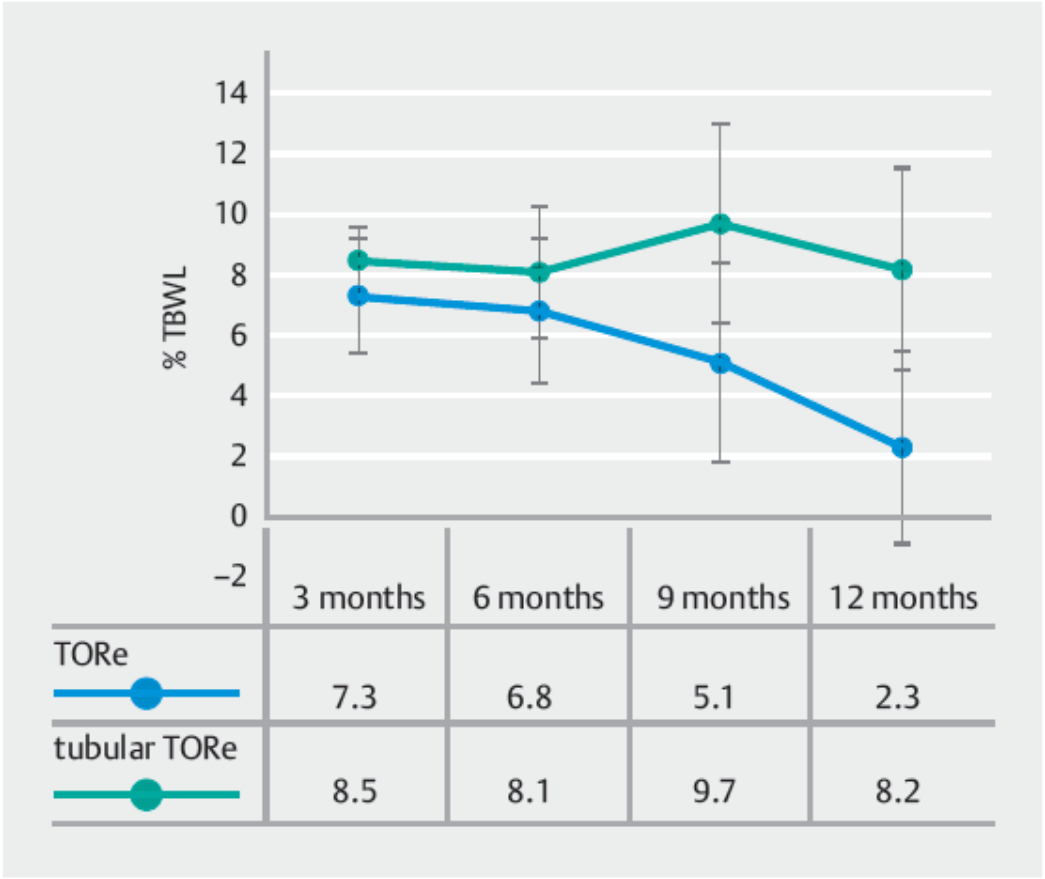
Schulman A et al. Gastrointestinal Endoscopy 2018

Suture patten in TORe

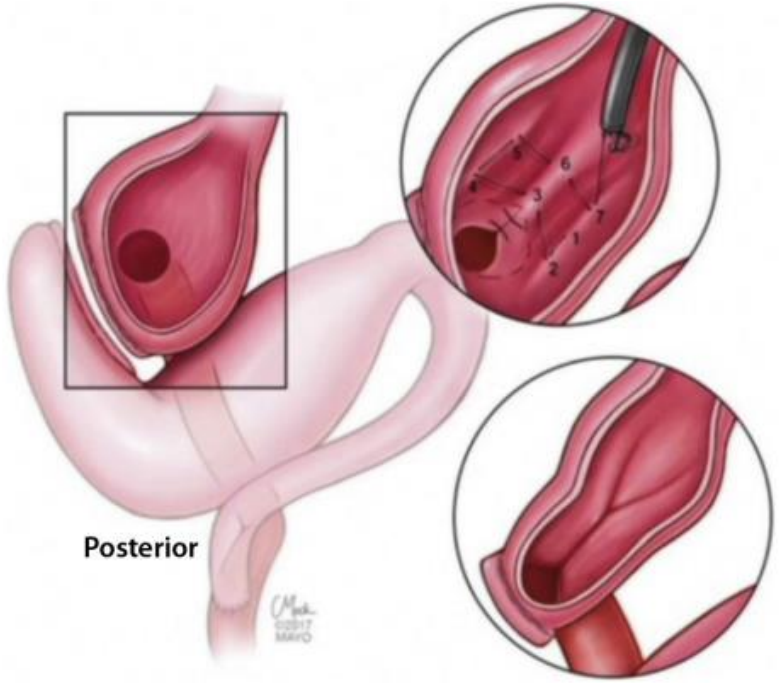


Callahan Z et al. Surg Endosc, 2020

Tubular transoral outlet reduction (tTORe)



▶ **Fig. 1** Comparison of % TBWL trend between tTORe and TORe over a 1-year period. At 12 months, *P* = 0.01. *P* value was non-significant at 3, 6, and 9 months.



Retrospective analysis of a prospectively database

128 patients (tTORe = 85, TORe = 43)

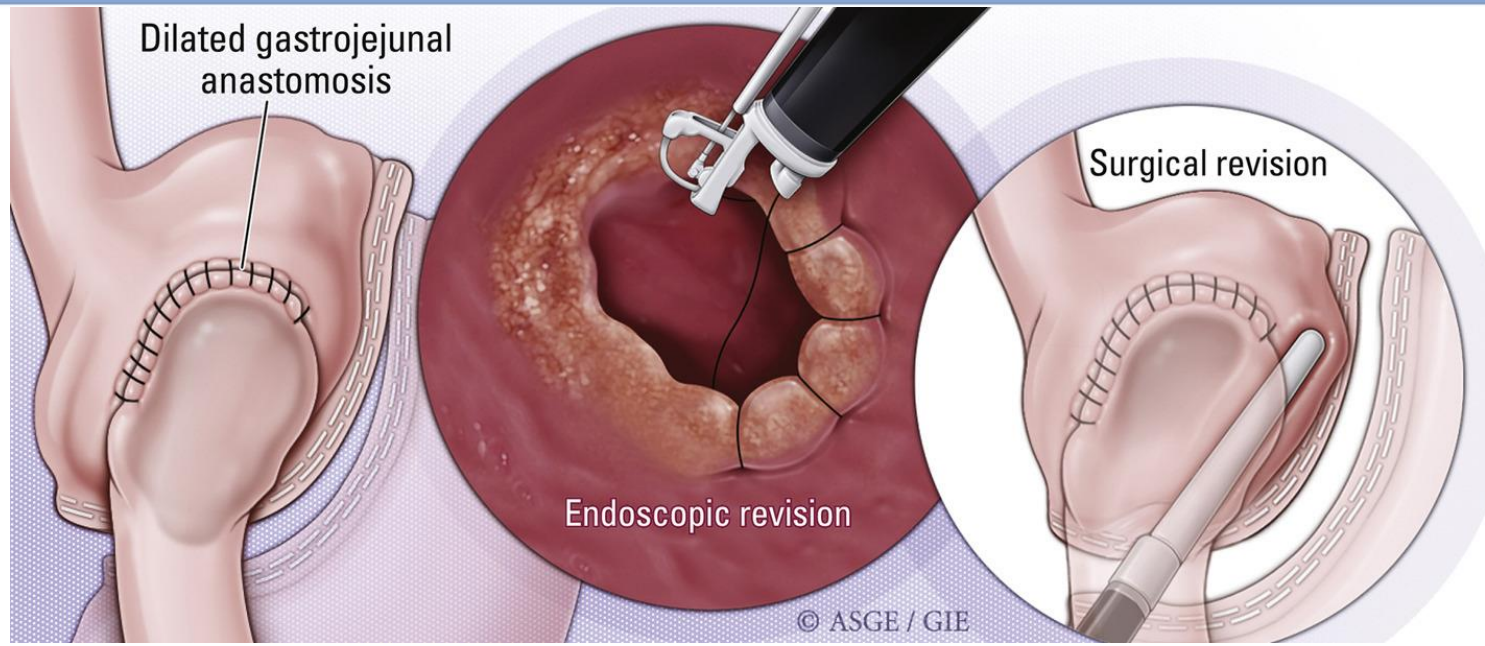
At 12 months: %TBWL was significantly higher in the tubularization group (8.2 ± 10.8 vs. 2.3 ± 7.3%, P = 0.01).

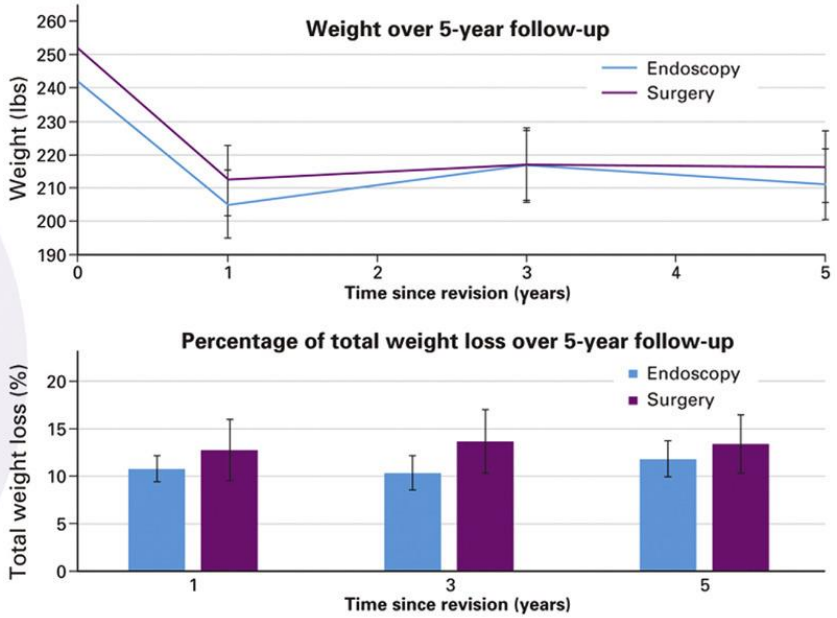
Procedural time: 60.5 vs. 53.4 minutes, P = 0.03

Civico Di Cristina Benfratelli

Abboud DM, Abu Dayyeh BK. Endosc Int Open. 2023 Sep 15;11(9):E829-E834.

TORe vs Surgical Revision





The 5-year efficacy of TORe has been demonstrated to be similar to surgical RYGB revision (11.5% [TORe] vs 13.1% [surgical] TWL; P .67), but with significantly fewer adverse events (AEs; 6.5% vs 29%; P .043).

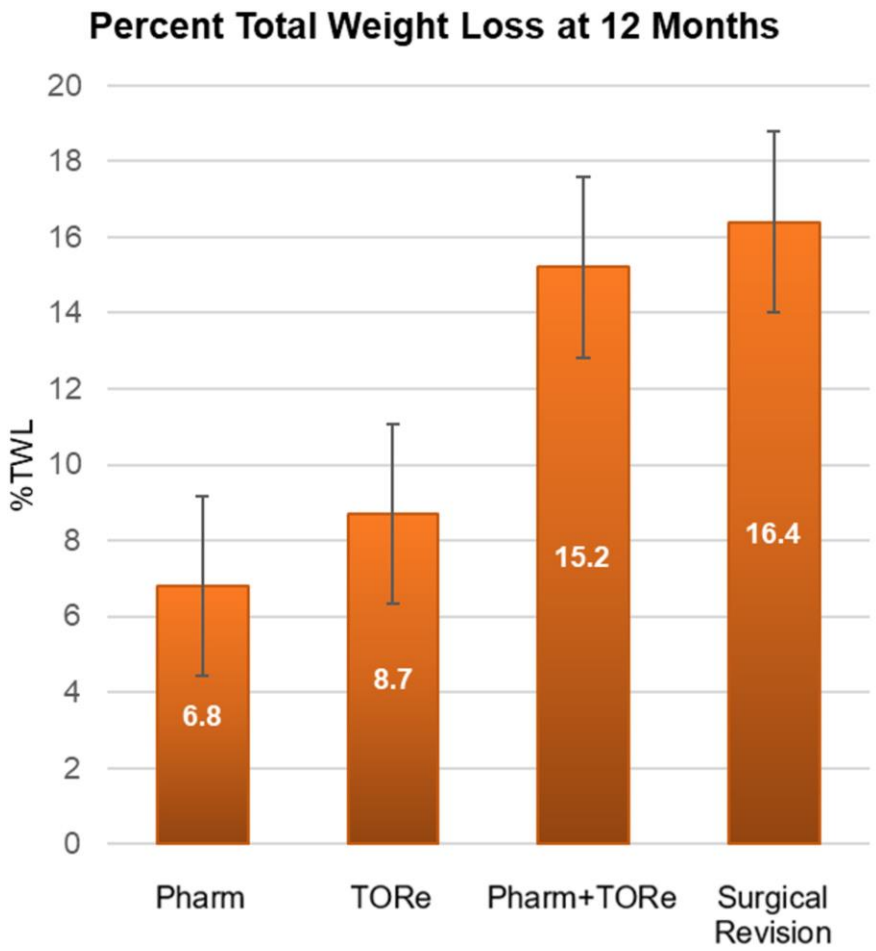
	ENDO	SURGICAL	p
Efficacy at 5 years	11.5% TBWL	13.1% TBWL	0.67
Adverse events	6.5%	29.0%	0.04
Safety profile	0% SAE rate	19.4% SAE rate	0.024

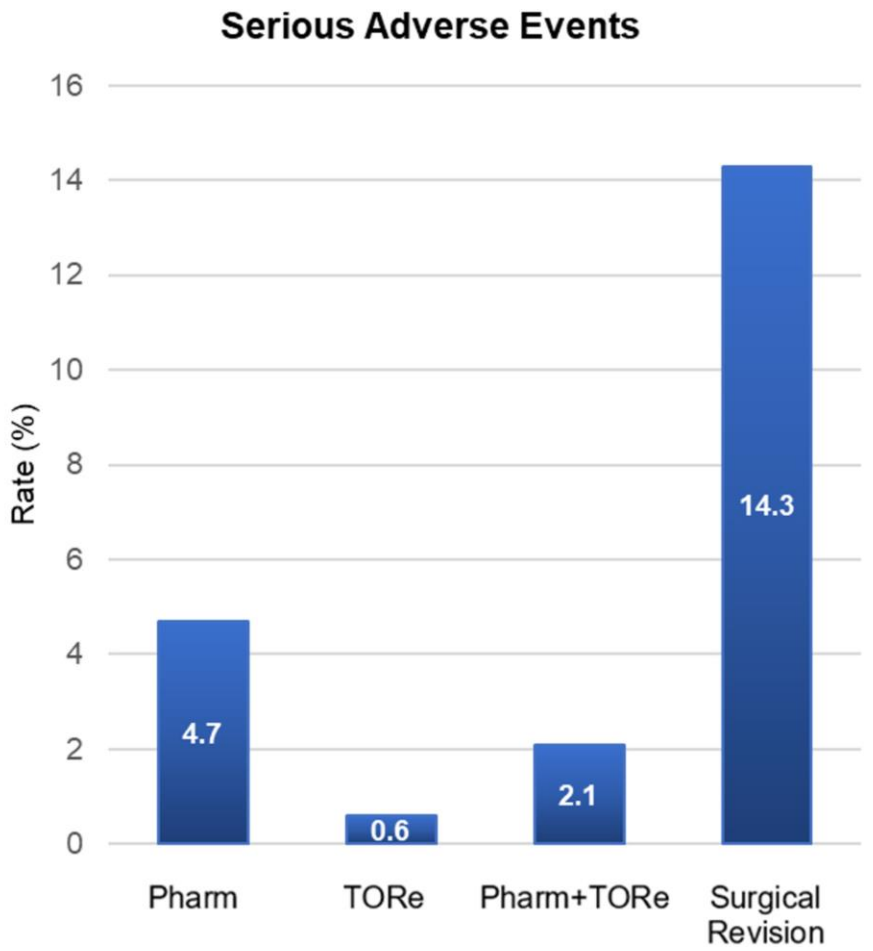
TABLE 2. Adverse event rate comparison

Outcome	Endoscopy (n = 31)	Surgical (n = 31)	*P* value
Adverse event	2 (6.5)	9 (29)	.043
GI leak/perforation	0	3 (9.7)	
Ulcer	0	1 (3.2)	
Gastrojejunal anastomosis stenosis	1 (3.2)	2 (6.5)	
GI bleeding	1 (3.2)	1 (3.2)	
Small-bowel obstruction	0	1 (3.2)	
Incarcerated incisional hernia	0	1 (3.2)	
Serious adverse events	0	6 (19.4)	.024
Early adverse events	1 (3.2)	7 (22.3)	.53

Dolan R et al. Gastrointest Endosc. 2021 Nov;94(5):945-950.

Endoscopic revision vs medical management





Combination therapy was associated with 15.2% versus 6.8% TWL for AOMs alone (P<.0001) and 8.7% for TORe alone (P<.0001) at 12 months. SAE rates were similar for combination therapy (2.1%), AOM alone (4.7%), and TORe alone (0.6%) (P>.05).

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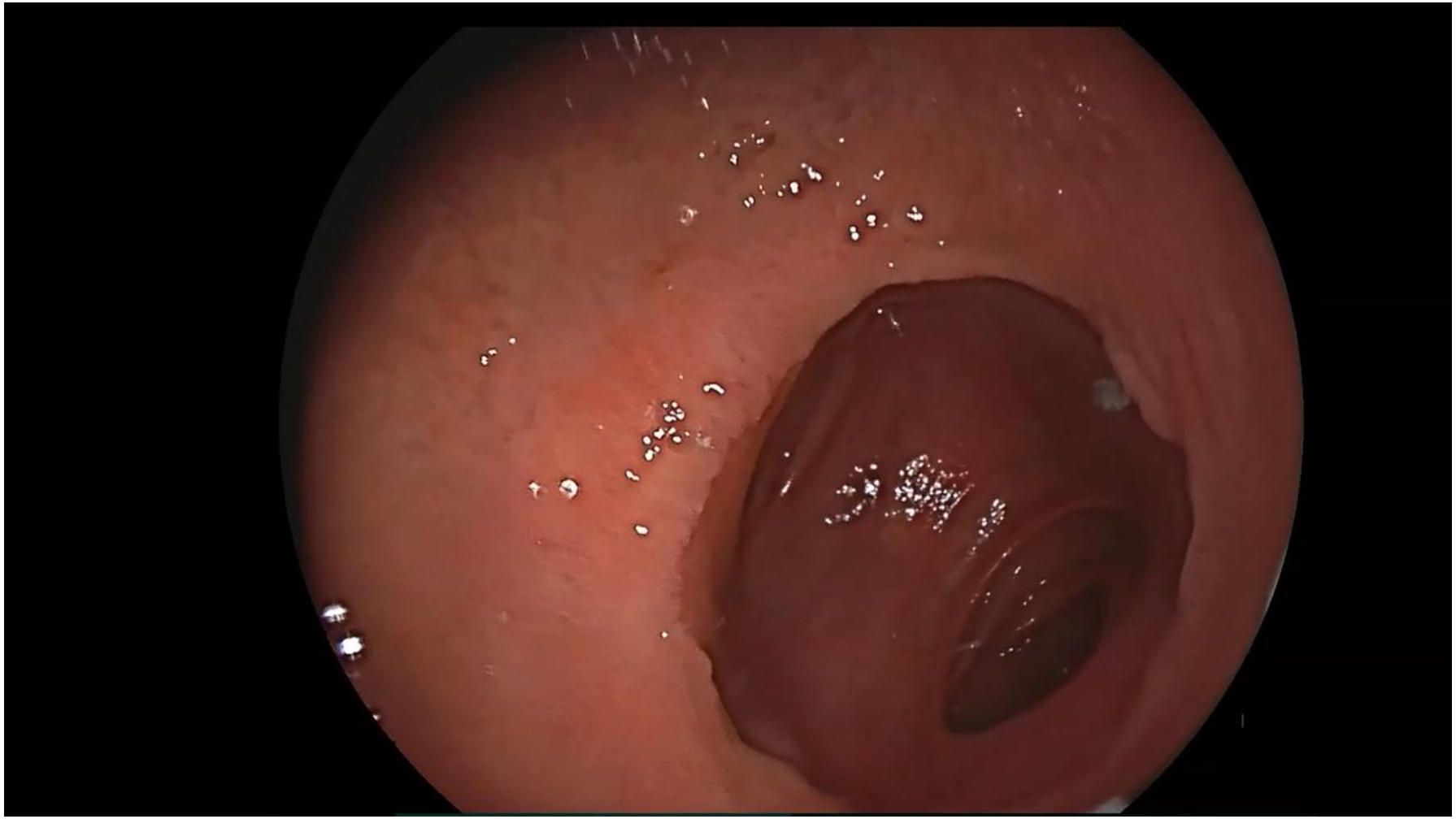
Jirapinyo P and Thompson CC. Gastrointest Endosc. 2023 Oct;98(4):552-558.

Modified ESD-TORe

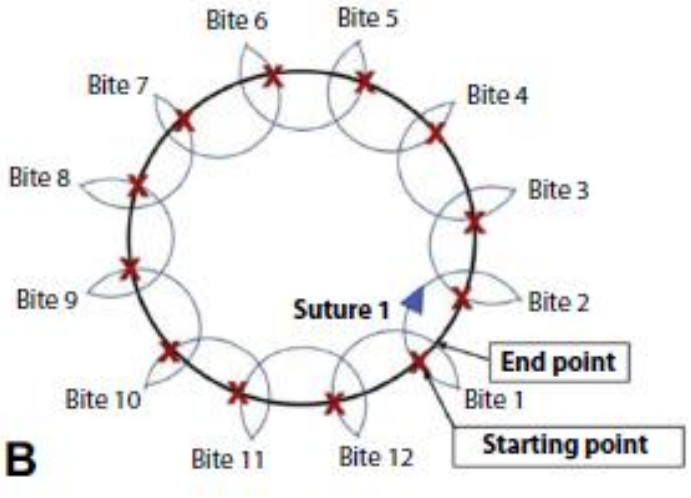


ESD-TORe

Apollo OverStitch

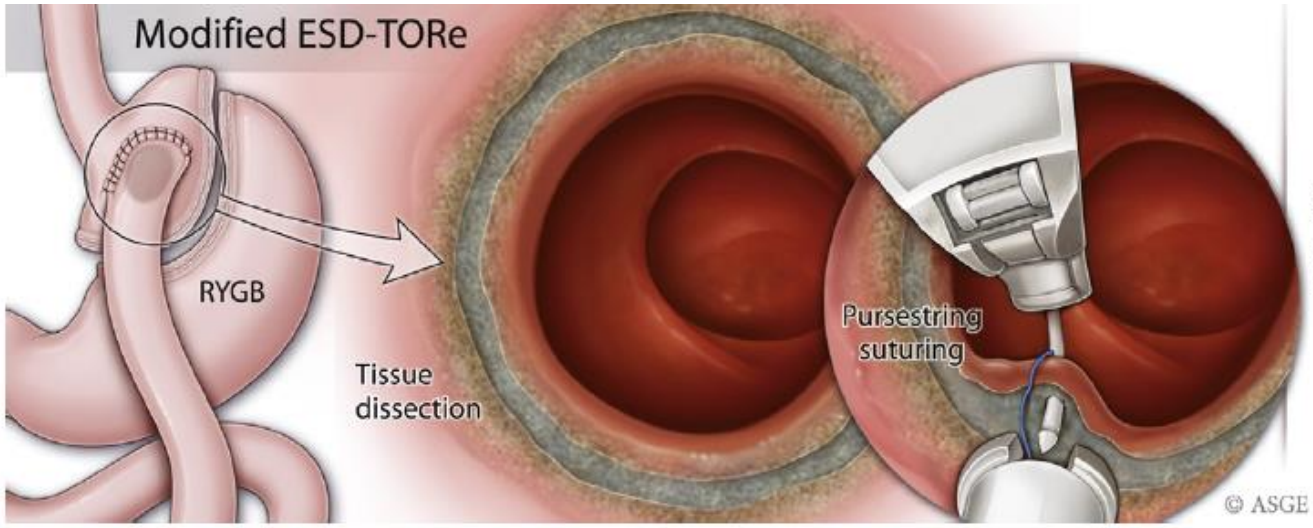
Double channel endoscope

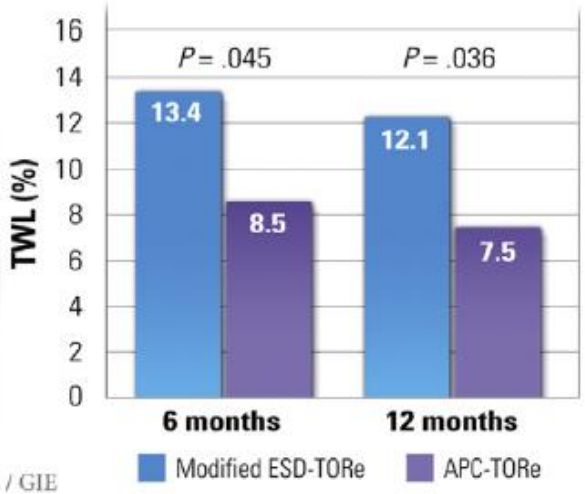
Purse-string sutures



Jirapinyo P, Thompson CC. Gastrointest Endosc. 2023 Oct;98(4):552-558.

Modified ESD-TORe

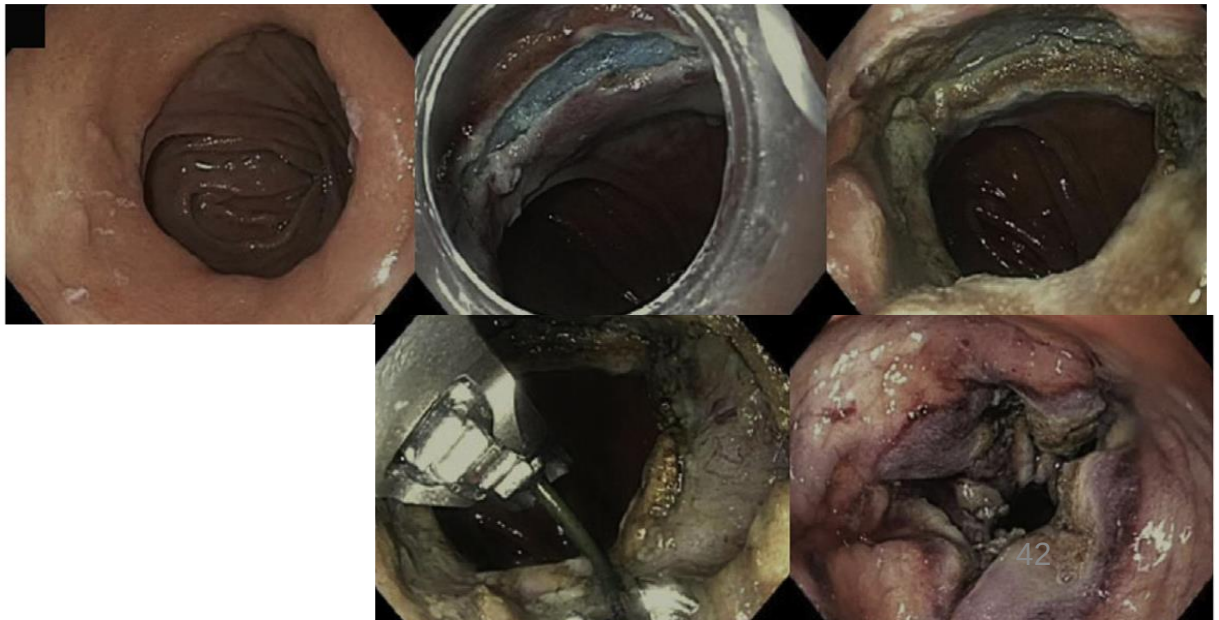




15 patients with ESD-TORe were matched 1:3 to 45 patients with APC-TORe based on baseline GJA and pouch sizes.

1) Injection into the submucosa layer
2) Circunferential submucosa incision
3) Trimming of submucosal space
4) APC on margins
5) Purse-string suture pattern

Complications: esophageal erosions



Jirapinyo P et al. Gastrointest Endosc. 2020 Jun;91(6):1282-1288.

Ft-TORe and APMC-TORe

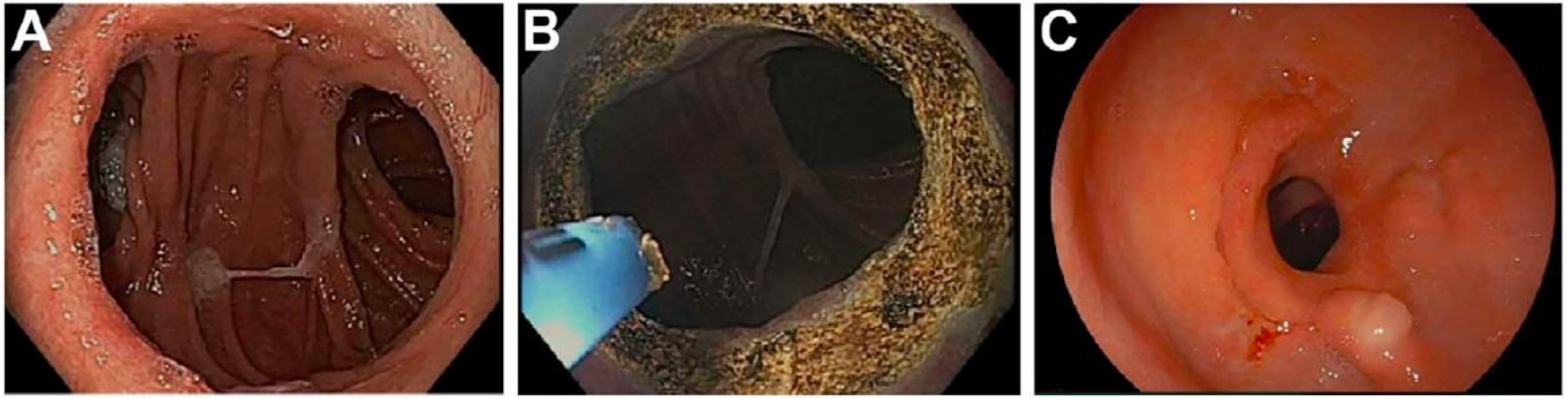
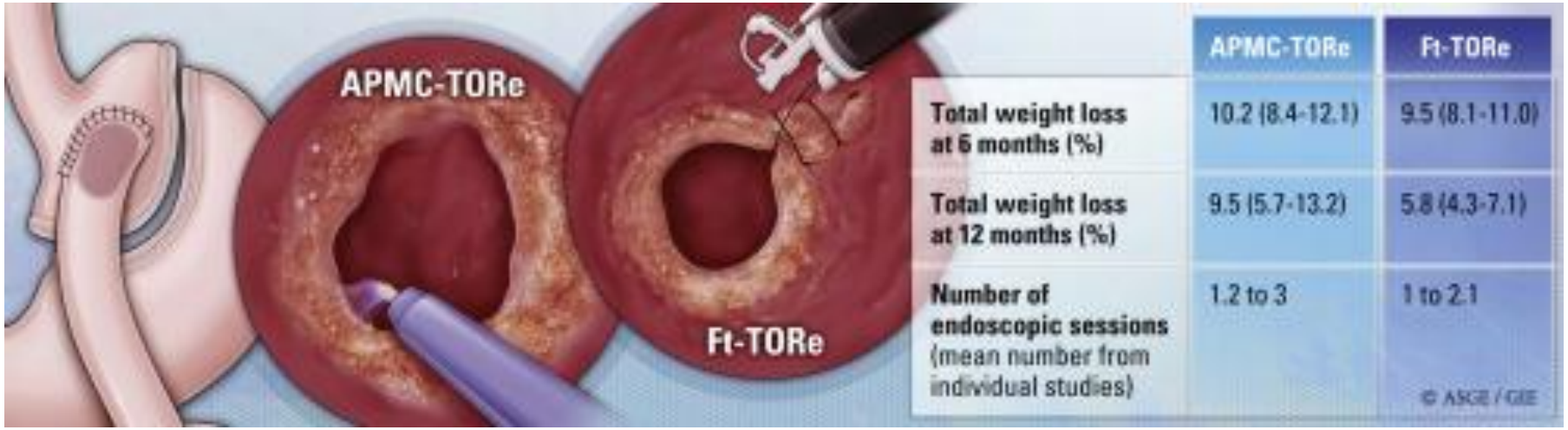


Fig. 7. (*A*) Dilated GJA, (*B*) GJA after first APC session, and (*C*) GJA after 3 APC sessions.

Szvarca D & Jirapinyo P. Gastrointest Endosc Clin N Am. 2024 Oct;34(4):639-654.

Ft-TORe and APMC-TORe



	APMC-TORe	Ft-TORe
Total weight loss at 6 months (%)	10.2 (8.4-12.1)	9.5 (8.1-11.0)
Total weight loss at 12 months (%)	9.5 (5.7-13.2)	5.8 (4.3-7.1)
Number of endoscopic sessions (mean number from individual studies)	1.2 to 3	1 to 2.1

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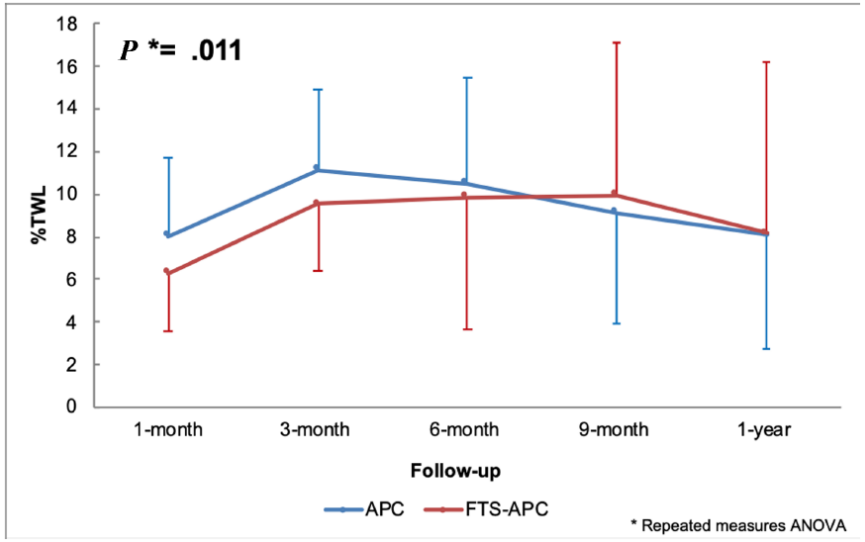
APMC-TORe - APC Mucosal ALONE **(n=888 patients)**

→Series of sessions (4) *(but more straightforward and widely available)*

ft-TORe (n=737 patients)

→Single session

Smaller aperture of the post-TORe GJA and greater change in the GJA diameter correlated with greater weight loss in APMC-TORe and numerical trends in ft-TORe.



Brunaldi et al. Prospective Randomized Controlled Trial. Gastrointest Endosc. 2020 Jul;92(1):97-107.e5.

APMC-TORe

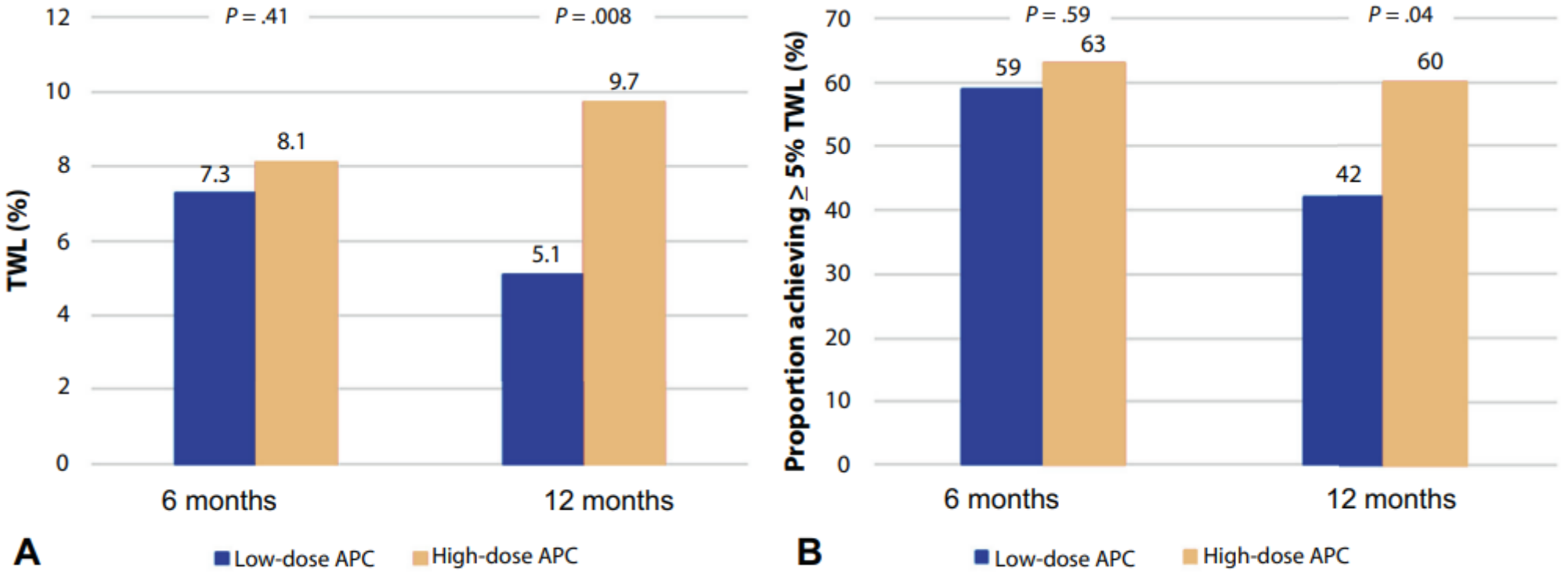


Figure 2. Efficacy of low- and high-dose argon plasma coagulation (APC) for the treatment of weight regain after Roux-en-Y gastric bypass. **A**, Percent total weight loss (TWL) at 6 and 12 months. **B**, Proportion of patients who achieved at least 5% TWL at 6 and 12 months.

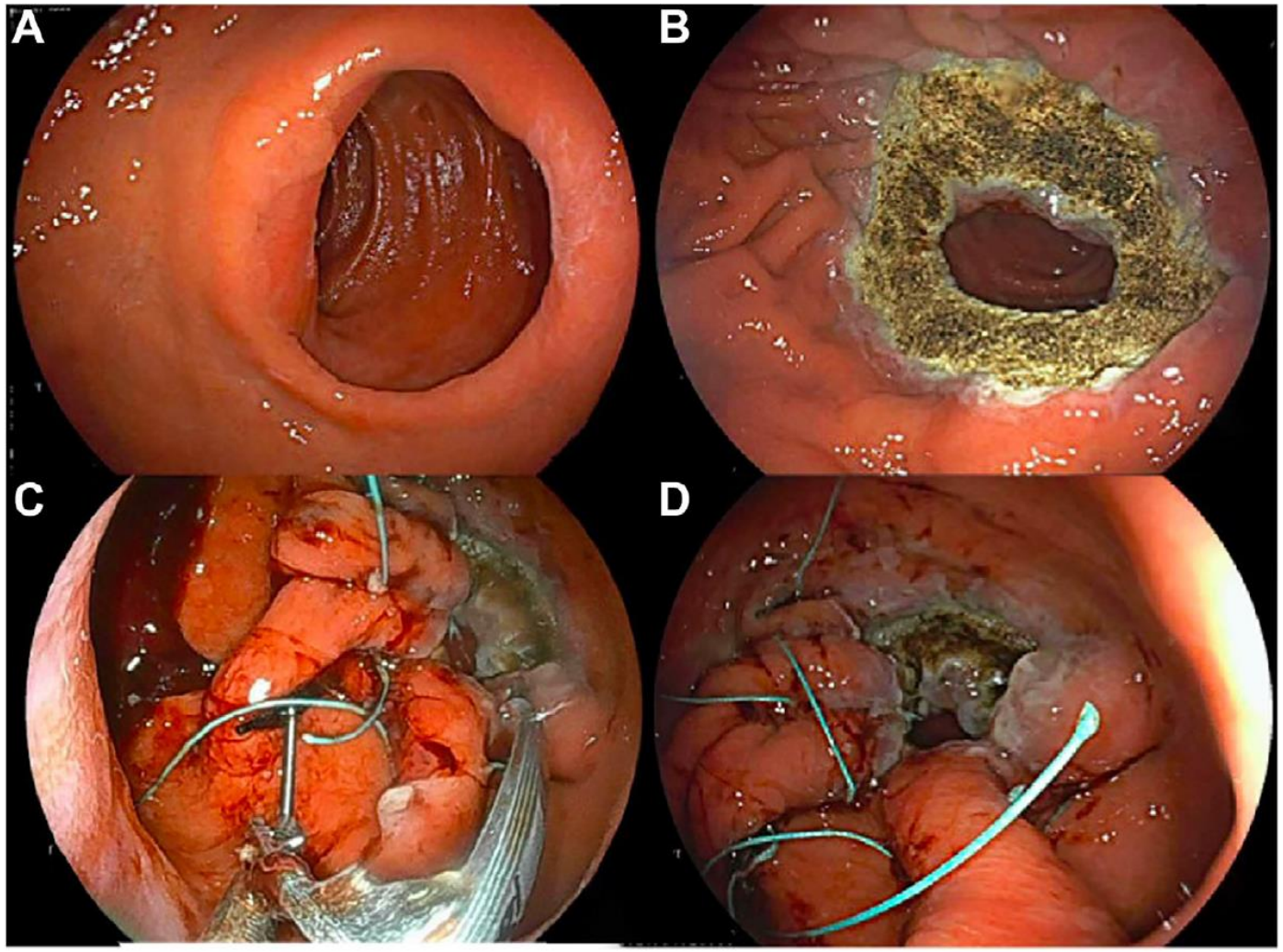
-High-dose (70–80 W) APC was superior to low-dose (45–55 W) APC for the treatment of weight regain.
-A single-center study including 217 patients who underwent 411 APC sessions showed that the 12-month TWL was 9.7% in the high-dose APC group versus 5.1% in the low-dose APC group (P 5 .008), with no significant difference in the GJA stenosis rate

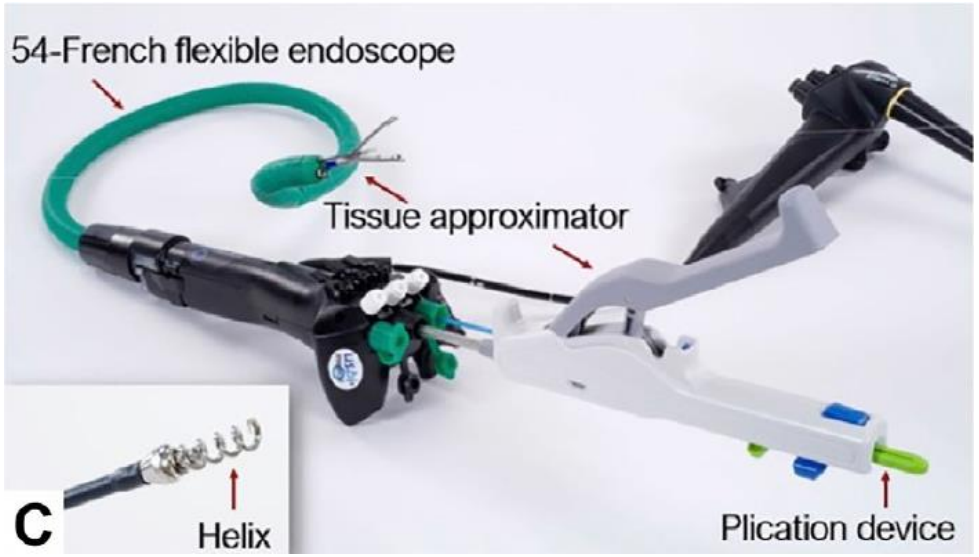
Civico Di Cristina Benfratelli

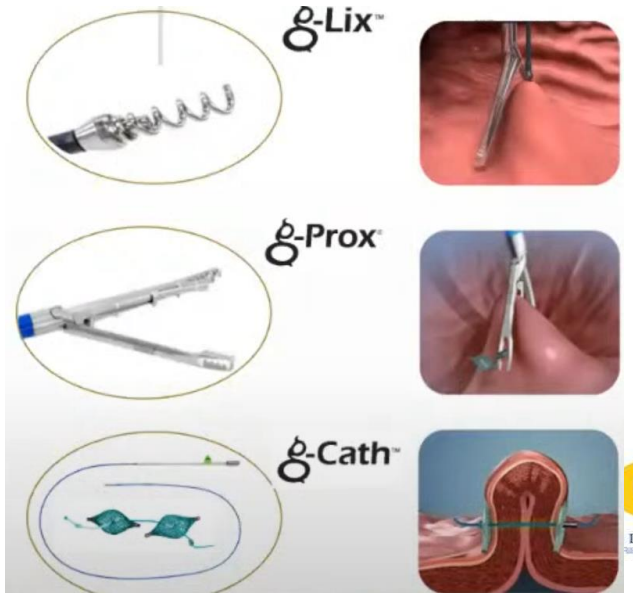
Szvarca D & Jirapinyo P. Gastrointest Endosc Clin N Am. 2024 Oct;34(4):639-654.

Plication-TORe (P-TORe)

Incisionless Operating Platform (IOP) plication device







Szvarca D & Jirapinyo P. Gastrointest Endosc Clin N Am. 2024 Oct;34(4):639-654.

Plication-TORe (P-TORe)

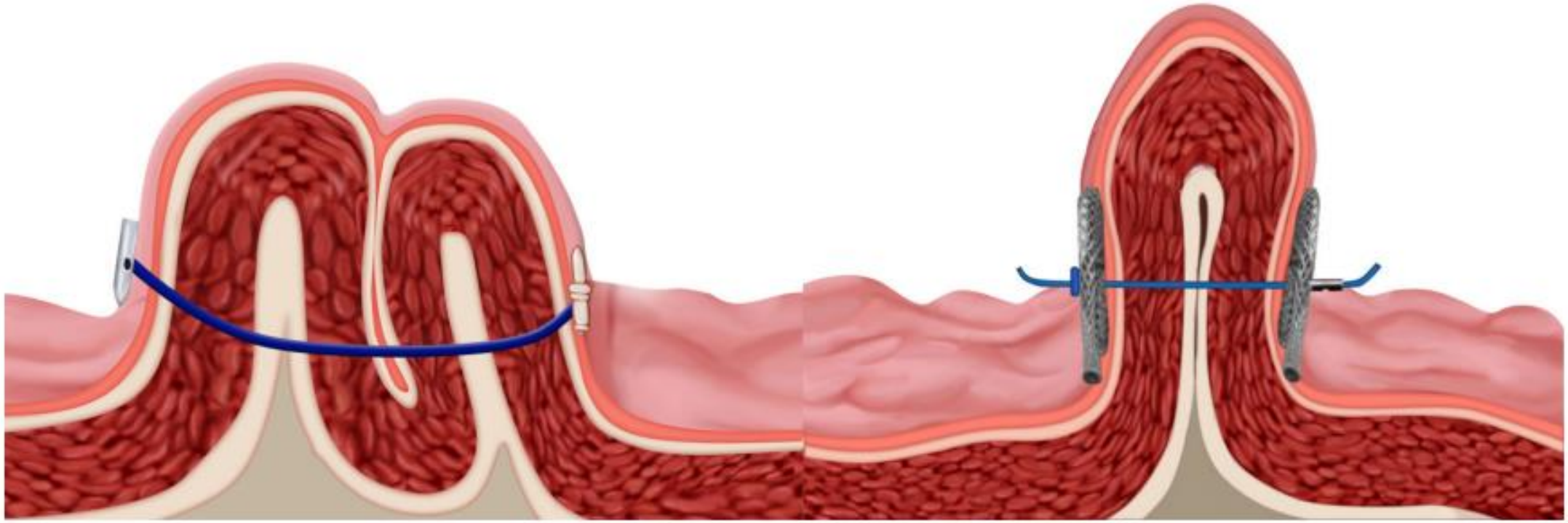
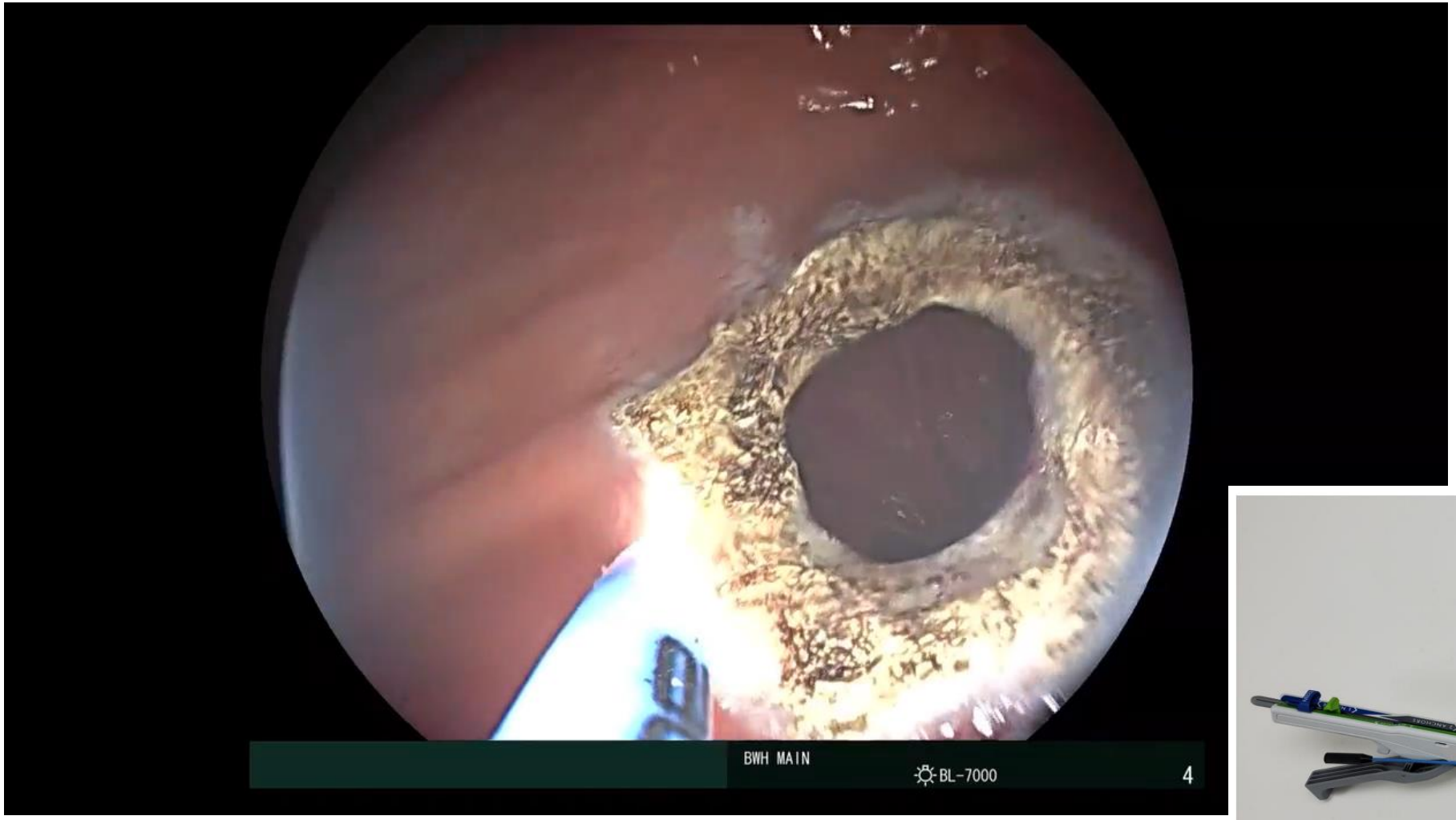


Figure 1.
(A) Endoscopic suturing with mucosa-to-mucosa tissue apposition (B) Endoscopic plication with serosa-to-serosa tissue apposition.

Jirapinyo P, Thompson CC. Gastrointest Endosc. 2022 Jul;96(1):51-56.

Plication-TORe (P-TORe)

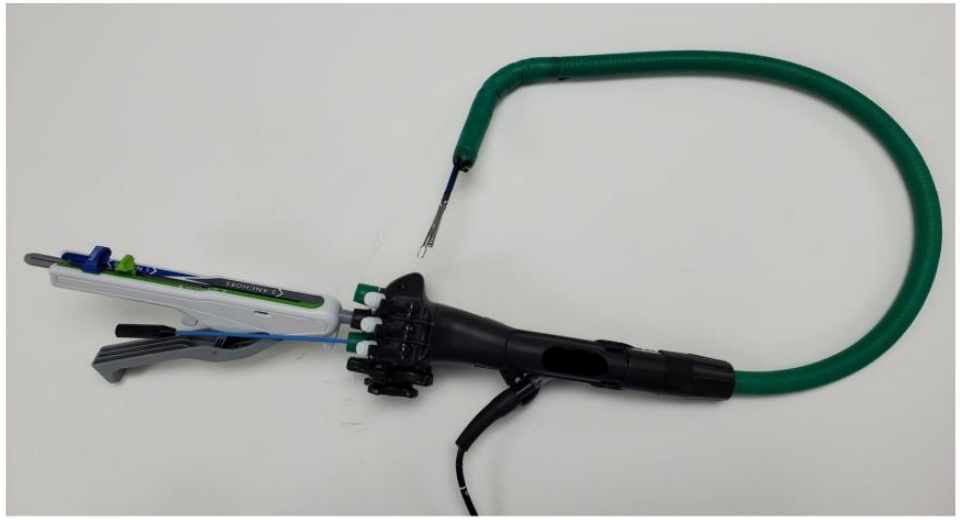


P-TORe

POSE-2 system

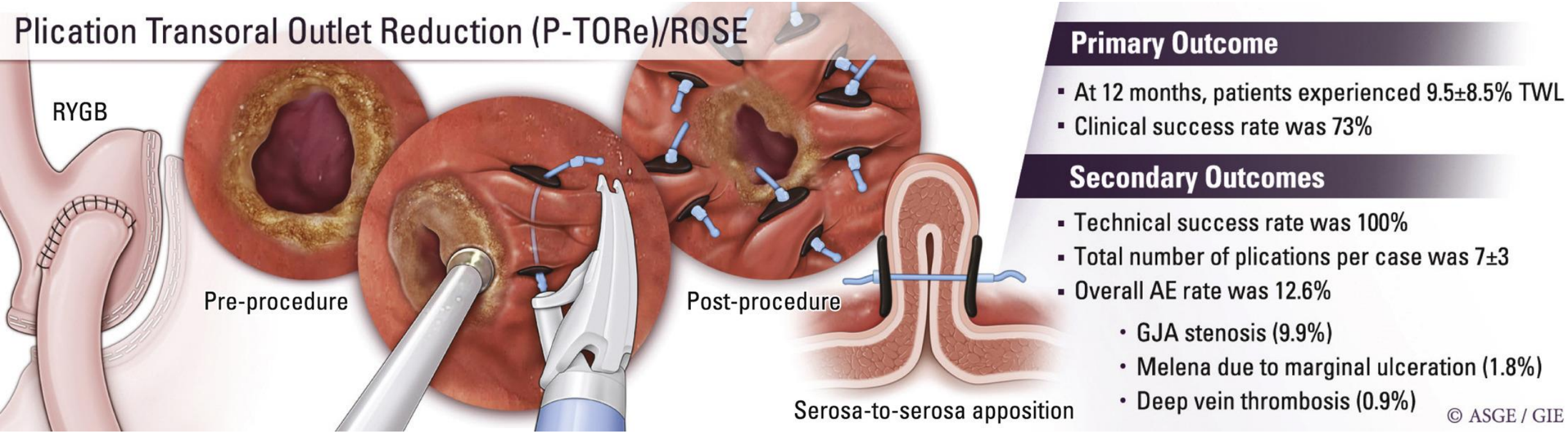
Ultraslim endoscope

Single sutures



Jirapinyo P, Thompson CC. Gastrointest Endosc. 2023 Oct;98(4):552-558.

Plication-TORe (P-TORe)



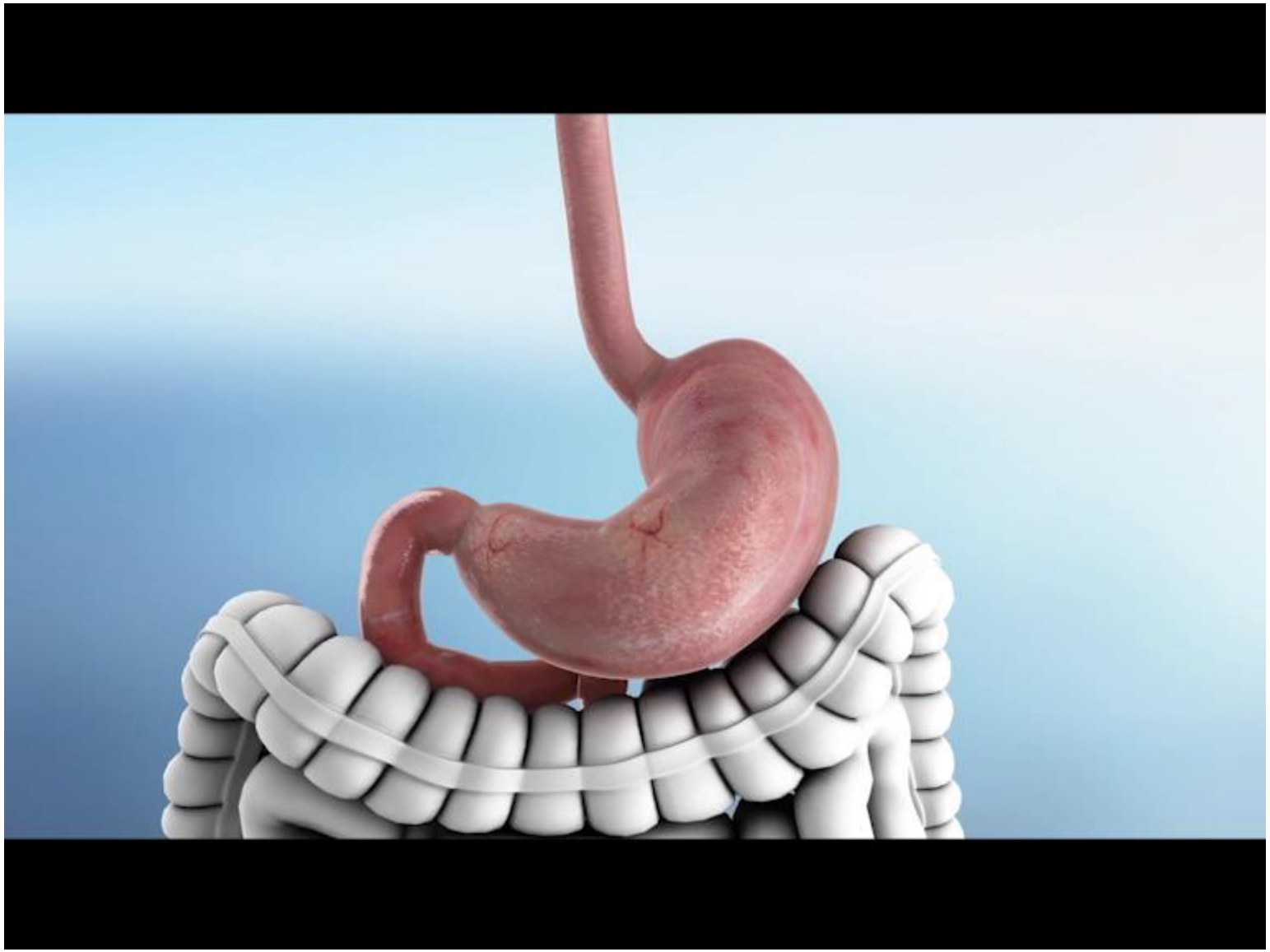
Jirapinyo et al, showed that P-TORe with APC around the GJA prior to plication resulted in 9.5% TWL at 12 months.

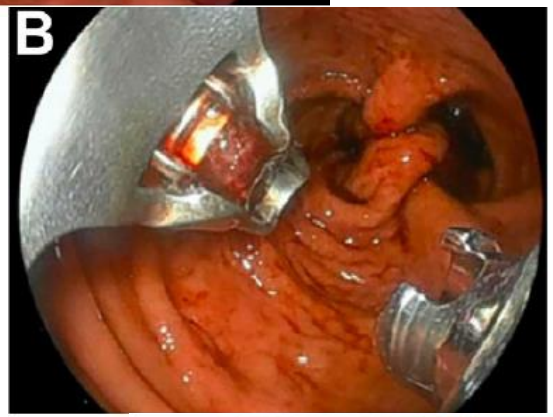
There were no reported SAEs.

The GJA stenotic rate was 9.9%, all of which were treated endoscopically

Jirapinyo P, Thompson CC. Gastrointest Endosc. 2022 Jul;96(1):51-56.

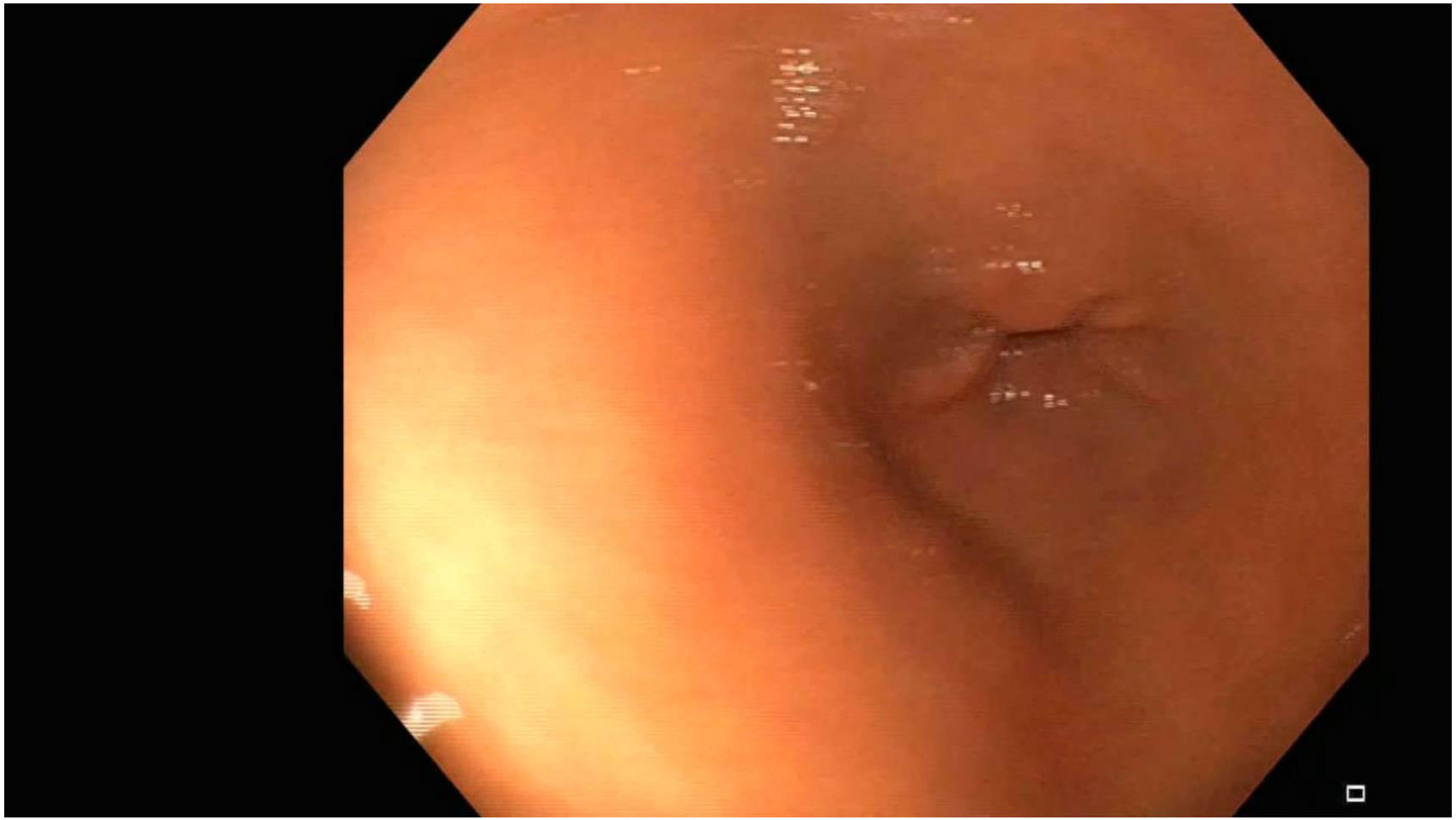
Revisional endoscopic sleeve gastroplasty (R-ESG)





Szvarca D & Jirapinyo P. Gastrointest Endosc Clin N Am. 2024 Oct;34(4):639-654.

Revisional endoscopic sleeve gastroplasty (R-ESG)



R-ESG

Previous ESG with POSE-2

Apollo OverStitch

Double channel endoscope

Bove V el al. VideoGIE. 2021 Jul 15;6(9):410-412

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Revisional endoscopic sleeve gastroplasty (R-ESG)

Revisional Endoscopic Sleeve Gastroplasty Of Laparoscopic Sleeve Gastrectomy

82 patients across 9 international centers

Median of 4 sutures
BMI at endoscopic revision (kg/m2), mean SD 37.2±5.7

TABLE 1. Demographic and procedural information

Patient and procedural characteristics	Distribution (n = 82)
Sex (% female)	92.7
Weight at time of LSG (kg), mean ± SD	159.5 ± 75.0
Lowest weight after LSG (kg), mean ± SD	104.1 ± 46.1
Weight regain after LSG (kg), mean ± SD	27.9 ± 20.7
Time from LSG to revision (years), median (IQR)	5 (4-7)
Weight at R-ESG (kg), mean ± SD	128.2 ± 57.5
Age at R-ESG (years), mean ± SD	42.8 ± 10.4
BMI at endoscopic revision (kg/m^2), mean ± SD	37.2 ± 5.7
No. of patients with dilated surgical sleeve noted at time of R-ESG (%)	36 (44)
Procedure duration (minutes), mean ± SD	48.3 ± 20.5
No. of sutures used, median (IQR)	4 (3-4)

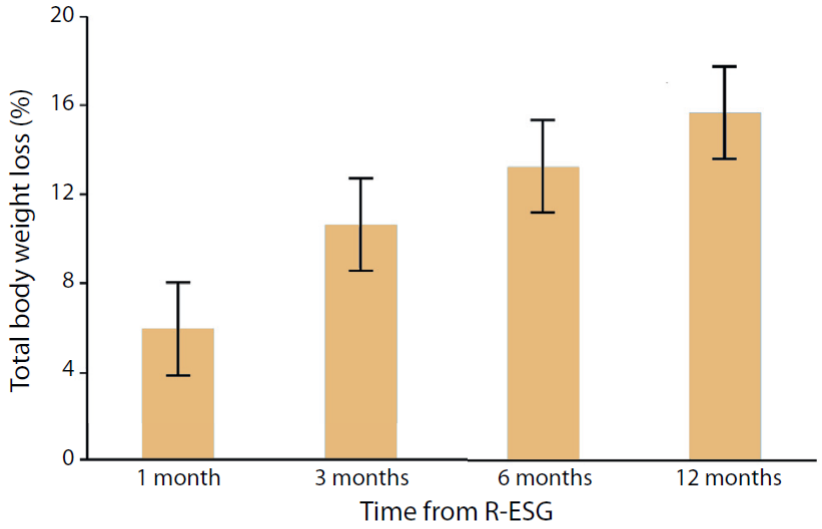
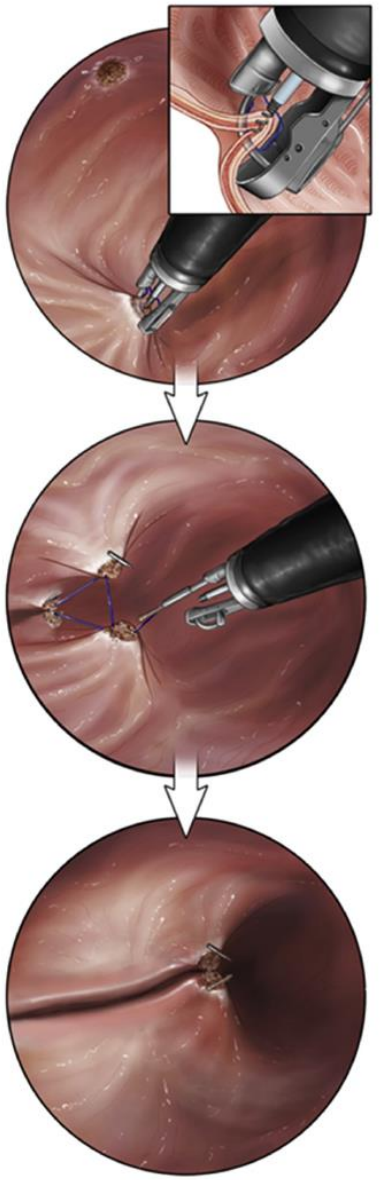


Figure 4. Total body weight loss (TBWL) after revisional endoscopic sleeve gastroplasty (R-ESG). TBWL (follow-up %) was 6.6% ± 3.2% at 1 month (81.7%), 10.6% ± 4.4% at 3 months (74.4%), 13.2% ± 10.1% at 6 months (63.4%), and 15.7% ± 7.6% at 12 months (51.2%).



Maselli DB et al. Gastrointest Endosc. 2021 Jan;93(1):122-130.

Revisional endoscopic sleeve gastroplasty (R-ESG)

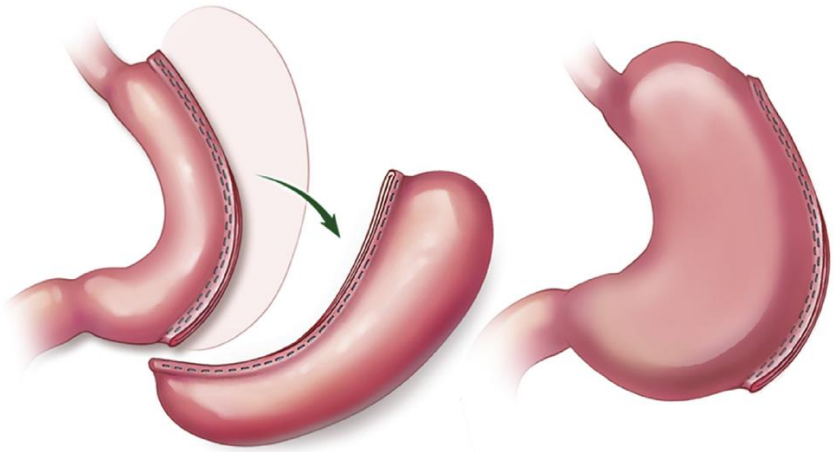
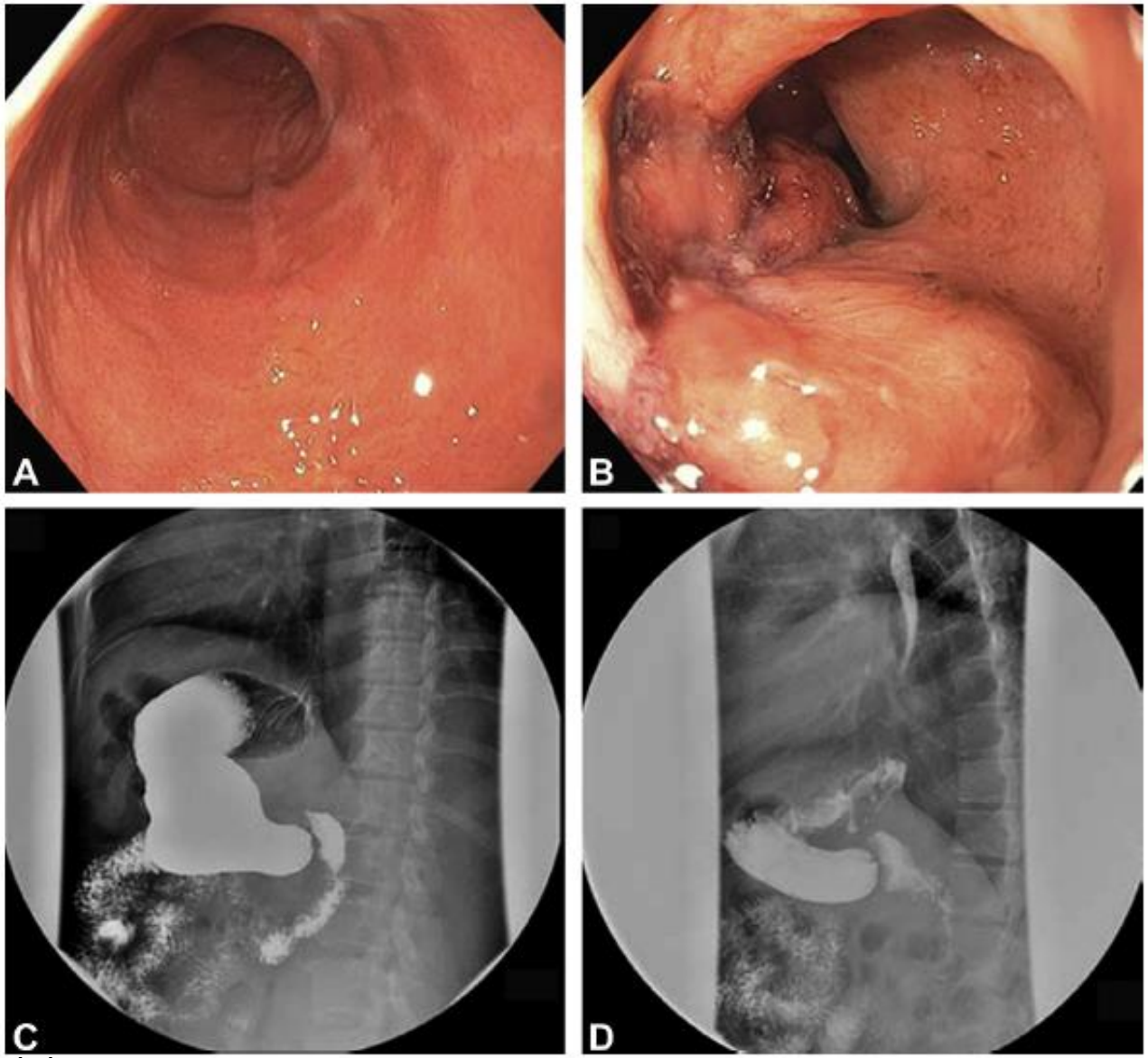


Figure 1. Laparoscopic sleeve gastrectomy (left) with postsurgical sleeve dilation (right).



Maselli DB et al. Gastrointest Endosc. 2021 Jan;93(1):122-130.

OverStitch Sleeve Revision (R-EndoSleeve)

Adverse event	Proportion of subjects observed with AE (%)	Severity grading	Attribution	Therapy provided
Dehydration requiring IVF fluids	4/82 (4.9%)	Mild	Definite	IV fluids
New GERD symptoms	4/67 (9.0%)	Mild	Probable	Oral proton pump inhibitor therapy
Vomiting, narrowed gastroesophageal junction on UGI series	1/82 (1.2%)	Moderate	Definite	Single endoscopic dilation, 2 day hospitalization

No SAES

%TBWL → 15.7% ± 7,6% at 12m

At 12m → 81%pt >10%TBWL

At 12m → 52,4%pt > 15%TBWL

Maselli DB et al. Gastrointest Endosc. 2021 Jan;93(1):122-130.

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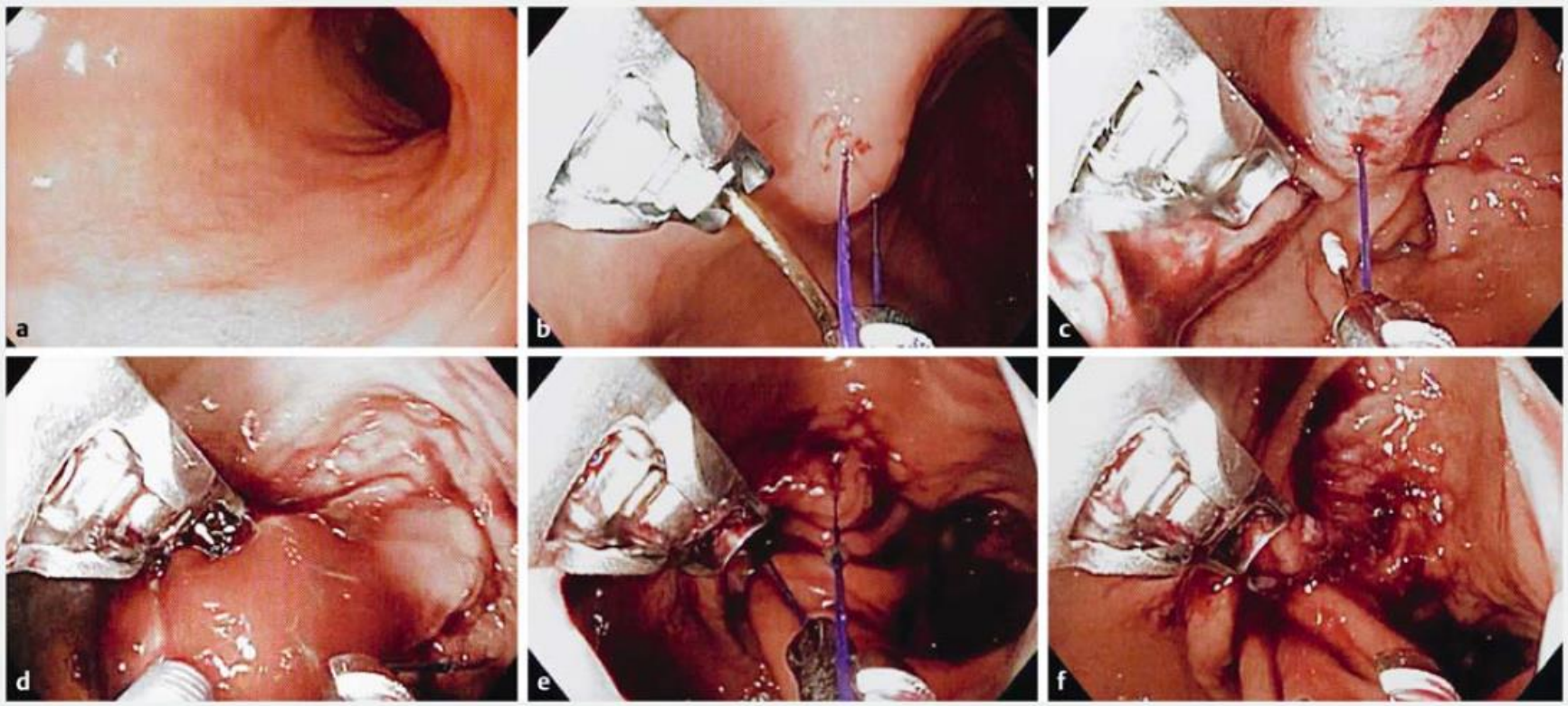
OverStitch Sleeve Revision (R-EndoSleeve)



Revisional Endoscopic Sleeve Gastroplasty Of Laparoscopic Sleeve Gastrectomy

34 patients across 12 international bariatric centers (Brazil)

3-5 sutures
At 1 year, 82.4% and 100% of patients achieved ≥ 10%TWL and ≥ 25% EWL,
respectively.

De Moura D et al. Endoscopy. 2020 Mar;52(3):202-210.

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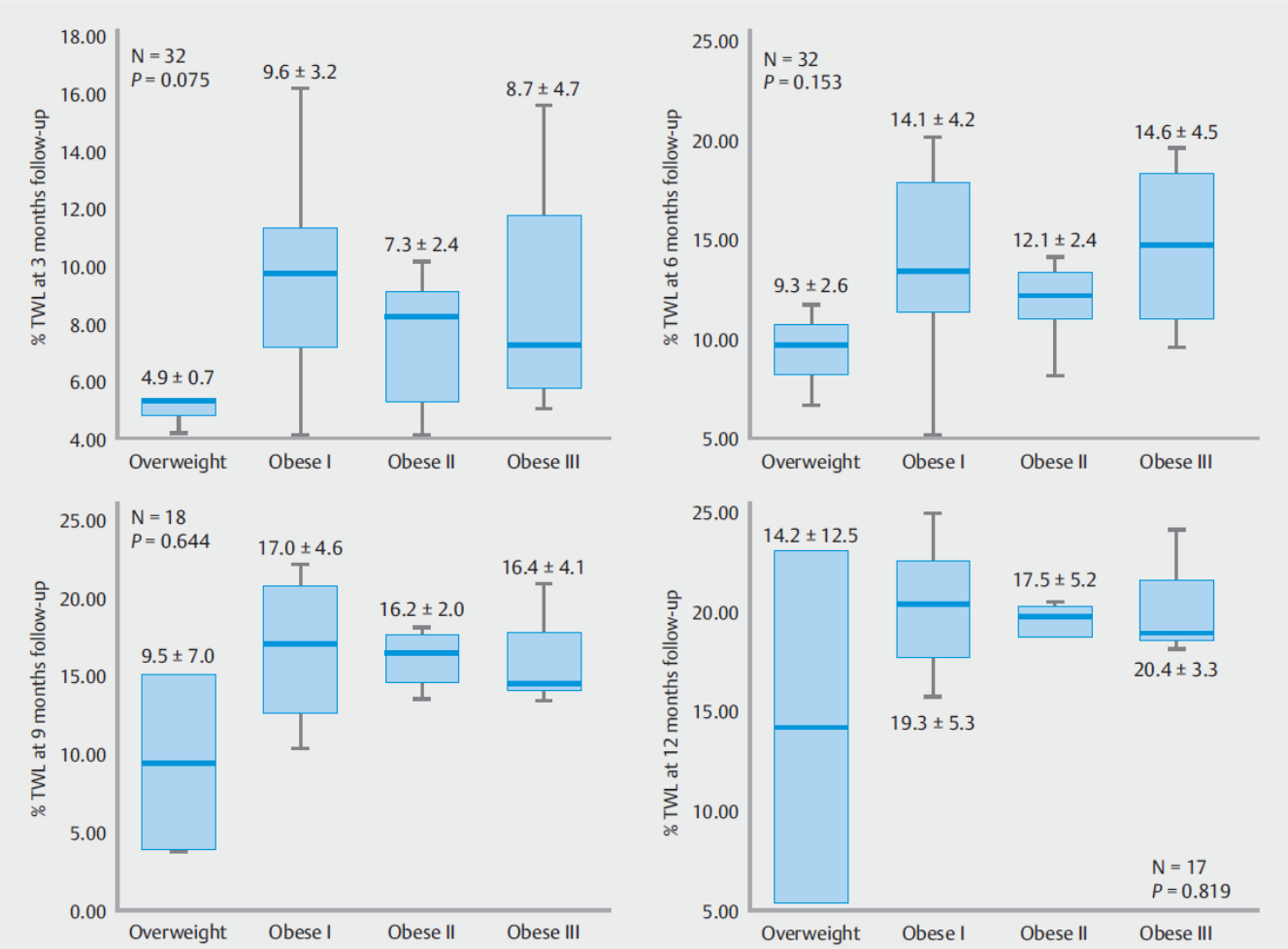
OverStitch Sleeve Revision (R-EndoSleeve)



▶ **Fig. 3** Comparison between percent total weight loss (%TWL) at 3, 6, 9, and 12 months after endoscopic sleeve gastroplasty in all body mass index subgroups.

Revisional Endoscopic Sleeve Gastroplasty Of Laparoscopic Sleeve Gastrectomy

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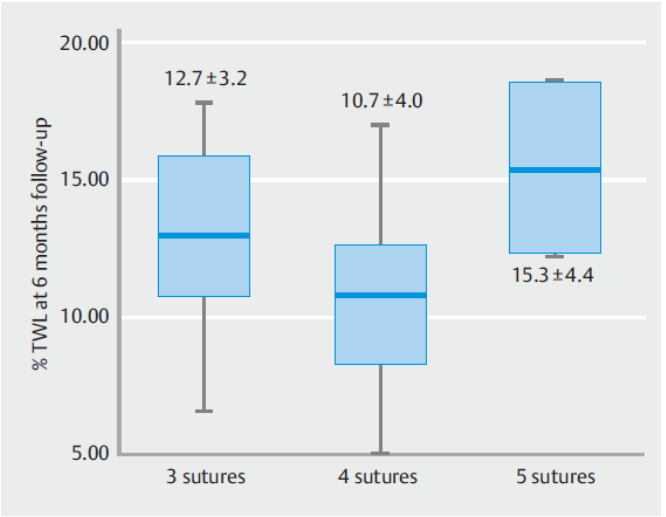

De Moura D et al. Endoscopy. 2020 Mar;52(3):202-210.

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OverStitch Sleeve Revision (R-EndoSleeve)

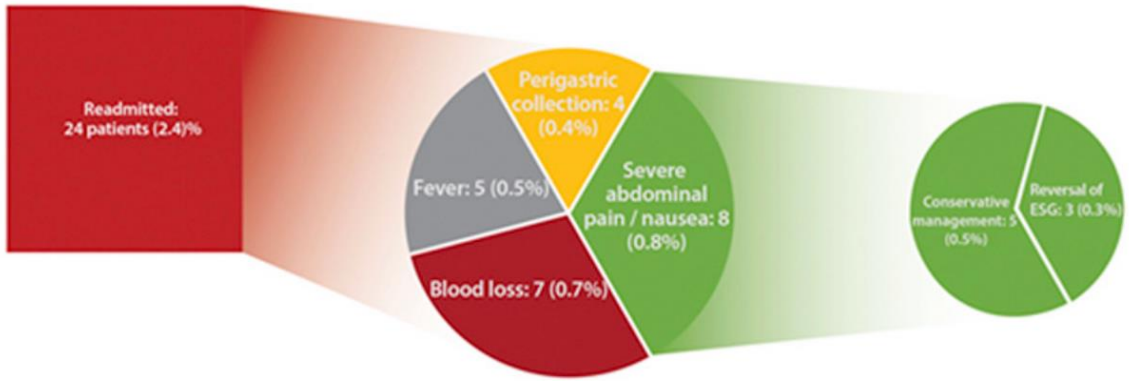
Single-Surgeon Registry

N=1,000

BMI=33.3 ± 4.5kg/m²

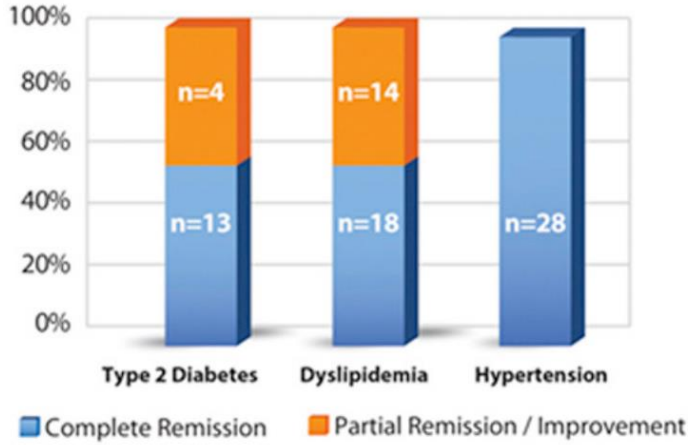
Age=34.4 ± 9.5 years

Readmissions after ESG



% Excess Weight Loss after ESG

Change in Co-morbidities after ESG



Revision/Redo

Alqahtani A et al. GIE 2019

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OverStitch Sleeve Revision (R-EndoSleeve)

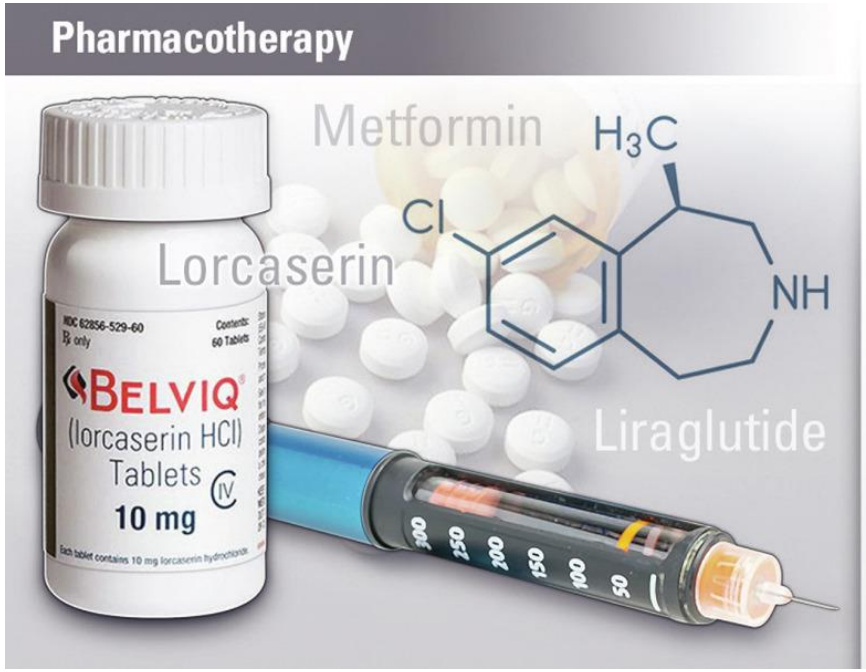
TABLE 4. Revision rates after primary ESG in the first 1000 patients who underwent the procedure at our center

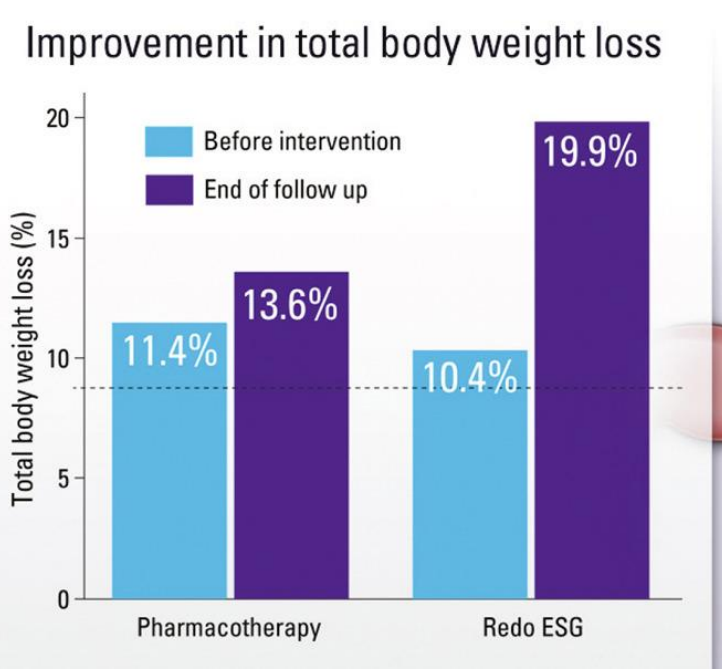
Procedure	No. of patients (%)
Endoscopic–laparoscopic revision to sleeve gastrectomy	8 (.8)
Redo-ESG	5 (.5)
Reoperation	0 (.0)

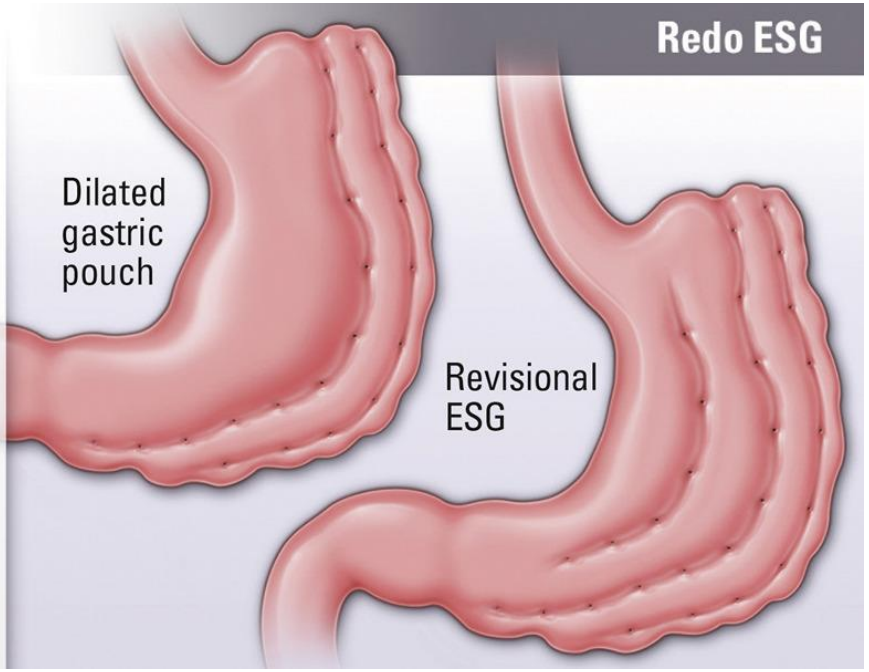
ESG, Endoscopic sleeve gastroplasty.

Alqahtani A et al. GIE 2019

R-EndoSleeve vs Pharmacotherapy







- Fifty-five patients were started on AOM and 24 patients underwent R-ESG
- The additional TBWL after R-ESG was significantly (both clinically and statistically) better than after initiation of AOM (9.5% ± 7.2% vs 2.1% ± 8.6%, respectively; P = .001).
- Final TBWL clearly favored R-ESG over AOM for treatment of weight recidivism (19.9% ± 10.4% vs 13.6% ± 9.2%, P = .028).

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Hajifathalian K et al. Gastrointest Endosc. 2023 Dec;98(6):944-949.

CURRICULUM

Curriculum for bariatric endoscopy and endoscopic treatment of the complications of bariatric surgery: European Society of Gastrointestinal Endoscopy (ESGE) Position Statement

Ivo Boškoski[1], Valerio Pontecorvi[1], Mostafa Ibrahim[2], Vincent Huberty[3], Roberta Maselli[4], Stefan K. Gölder[5], Jan Kral[6], Jayanta Samanta[7], Árpád V. Patai[8], Rehan Haidry[9], Marcus Hollenbach[10], Enrique Pérez-Cuadrado-Robles[11], Marco Silva[12], Helmut Messmann[13], Tony C. Tham[14], Raf Bisschops[15]

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Boškoski I et al. Endoscopy. 2023 Mar;55(3):276-293.

CONCLUSION

Weight regain following Metabolic and bariatric surgery is a complex and multifactorial condition that necessitates a multidisciplinary and personalized approach to management.

Lifestyle and behavioral modifications should be encouraged, and psychological and social support should be offered to all patients.

Understanding the anatomic changes and postoperative complications that may contribute to weight regain is essential for tailoring the most effective endoscopic revision approach.

Endoscopic revision of Metabolic and bariatric surgery is being increasingly performed for the treatment of weight regain given its safety, efficacy and mini-invasiveness (especially in high-risk or inoperable patients).

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Grazie
Thank you
Kamsa
Hamnida