



Can Endoscopy Manage Severe Dumping and Bile Reflux after Conventional and One Anastomosis Bypass – Techniques and Data

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Disclosures

BlueFlame Healthcare – Founder, General Partner
ELLES – Founder, Consultant, Board of Directors
Enterasense Ltd – Founder, Consultant, Board of Directors
EnVision Endoscopy – Founder, Consultant, Board of Directors
GI Windows Surgical – Founder, Consultant, Board of Directors

ColubrisMX – Consultant (Scientific Advisory Board)
Covidien/Medtronic – Consultant (Scientific Advisory Board)
FujiFilm – Consultant (Scientific Advisory Board), Institutional Research Grant

Apollo Endosurgery – Institutional Research Grant
Boston Scientific – Consultant (Consulting fees)/Research Support (Institutional Research Grant)
ERBE – Institutional Research Grant
Fractyl – Consultant/Advisory Board Member
GI Dynamics – Institutional Research Grant
Lumendi – Consultant/Institutional Research Grant
Olympus – Consultant (Consulting Fees)/Research Support (Equipment Loans)
USGI Medical – Institutional Research Grant

Agenda

Techniques for TORe

Data for Dumping and Bile Reflux

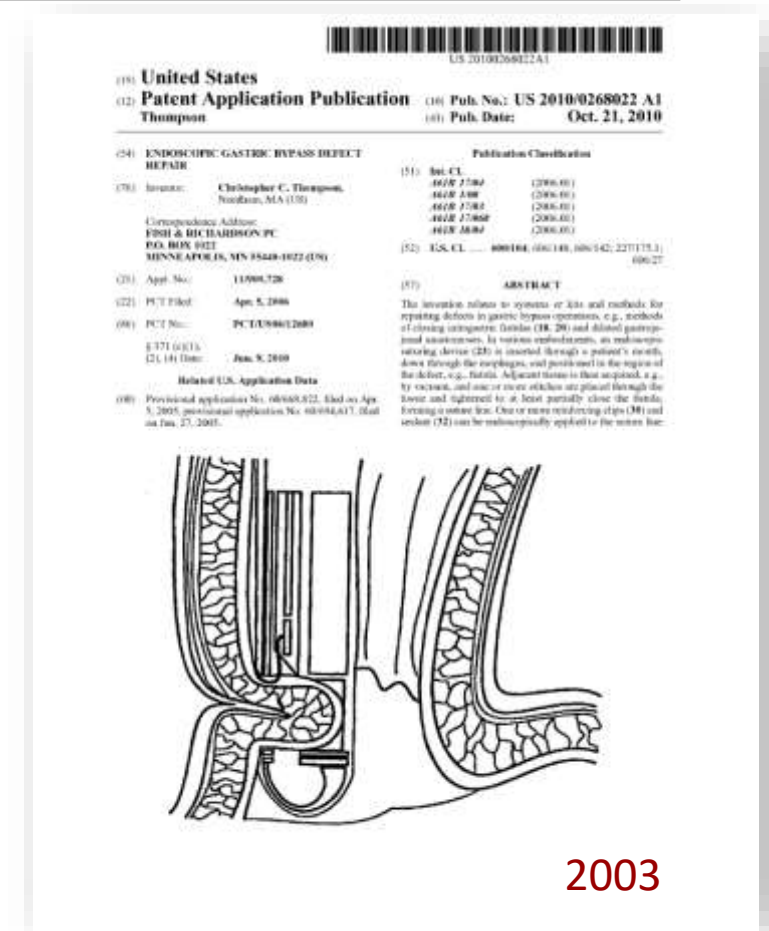
Endoscopic Options for TORe (Transoral Outlet Reduction)

Suturing / Plication Devices

- LSI ESD
- Bard EndoCinch
- EES Spiderman
- USGI IOP
- Endogastric Solutions StomaphyX
- Ovesco clips
- Apollo OverStitch

Sclerotherapy

APC



Concepts

Tissue preparation

Suture depth and type of apposition

Suture pattern

Final outlet size

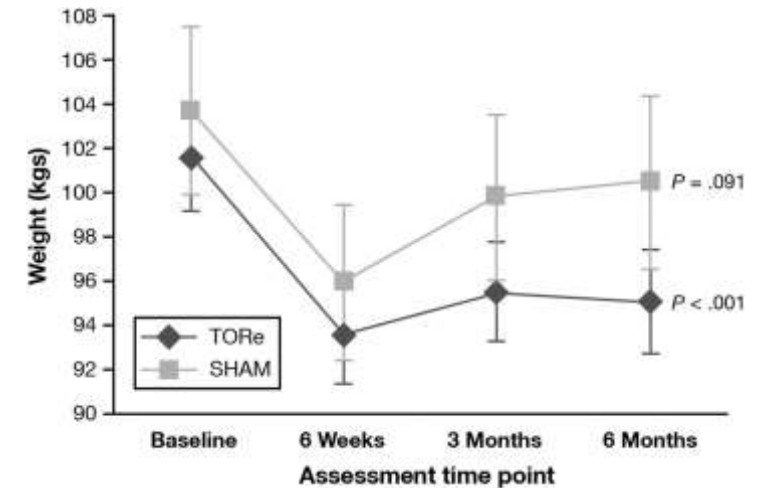
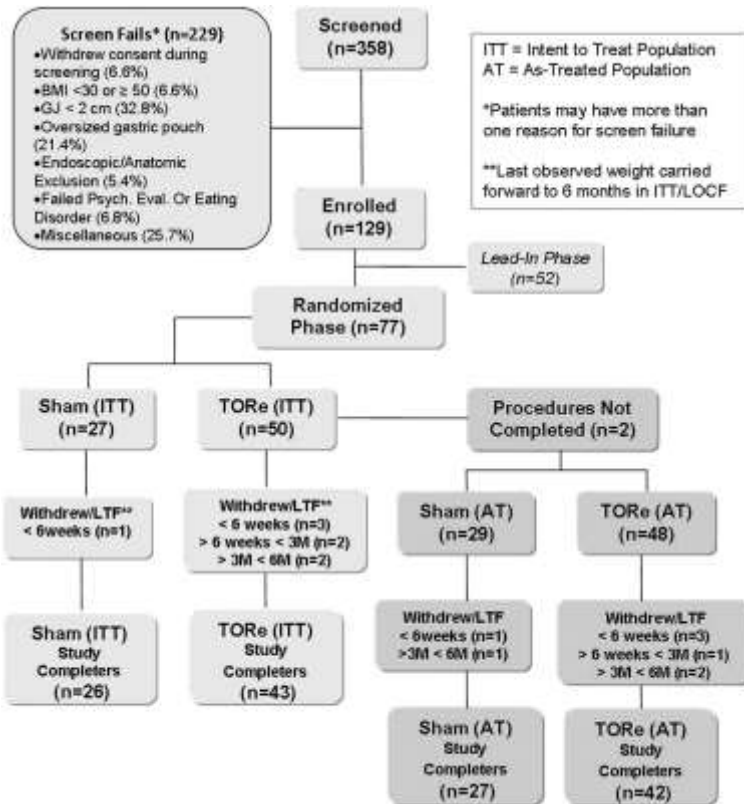
Endoscopic Suturing for Transoral Outlet Reduction Increases Weight Loss After Roux-en-Y Gastric Bypass Surgery

CHRISTOPHER C. THOMPSON,¹ BIPAN CHAND,² YANG K. CHEN,³ DANIEL C. DEMARCO,⁴ LARRY MILLER,⁵ MICHAEL SCHWEITZER,⁶ RICHARD I. ROTHSTEIN,⁷ DAVID B. LAUTZ,⁸ JAMES SLATTERY,¹ MICHELE B. RYAN,¹ STACY BRETHAUER,⁹ PHILLIP SCHAUER,⁹ MACK C. MITCHELL,¹⁰ ANTHONY STARPOLI,¹¹ GREGORY B. HABER,¹¹ MARC F. CATALANO,¹² STEVEN EDMUNDOWICZ,¹³ ANNETTE M. FAGNANT,¹⁴ LEE M. KAPLAN,¹⁵ and MITCHELL S. ROSLIN¹⁶



3.5% TWL

RESTORE Trial – Sham controlled RCT with 6 month crossover



Analysis population	Primary outcomes analyses: percentage weight lost from baseline			
	TORe LS mean (95% CI)	Sham control LS mean (95% CI)	Treatment difference ^a	
			LS Mean (95% CI)	P value
ITT population: LOCF	3.5 (1.8-5.3)	0.4 (-2.3 to 3.0)	3.2 (0.5-5.9)	.021
ITT population: only patients completing study	3.8 (1.8-5.8)	0.3 (-2.8 to 3.3)	3.5 (0.6-6.5)	.020
As treated population: only patients completing study	3.9 (1.9-5.9)	0.2 (-2.8 to 3.2)	3.7 (0.8-6.6)	.014

Comparison of a superficial suturing device with a full-thickness suturing device for transoral outlet reduction (with videos)

Nitin Kumar, MD, Christopher C. Thompson, MD

6% TWL

59 consecutive patients FT TORe matched to 59 of 129 ST TORe

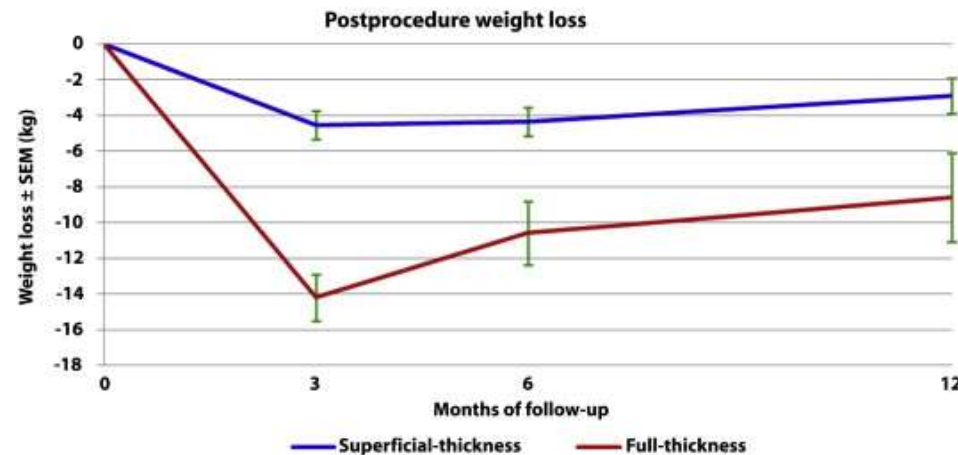
TABLE 1. Baseline characteristics (matched cohort)

	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)



Transoral outlet reduction: a comparison of purse-string with interrupted stitch technique

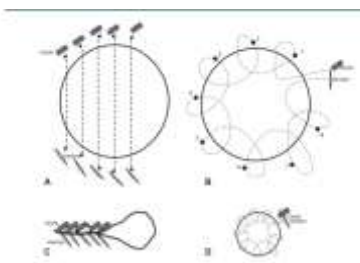
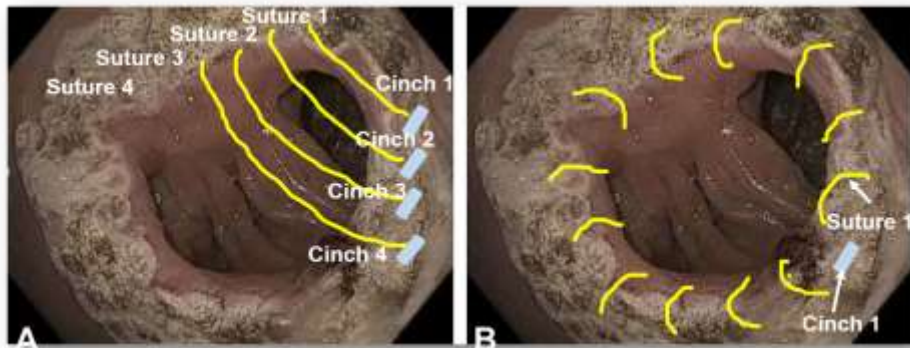


Allison R. Schulman, MD, MPH,^{1,2} Nitin Kumar, MD,³
 Christopher C. Thompson, MD, MSc, FASGE, FACP, AGAF^{1,2}



8.6% TWL

Analysis of a prospective registry including 241 patients (purse string (PS) 187, interrupted (I) 54)



12 months - PS vs I
 %TWL (8.6 vs 6.4, P 0.02)
 %EWL (19.8 vs 11.7, P < .001)
 %RWL (40.2 vs 27.8, P 0.02)
 Total weight loss (9.5 vs 7.8, P 0.04)

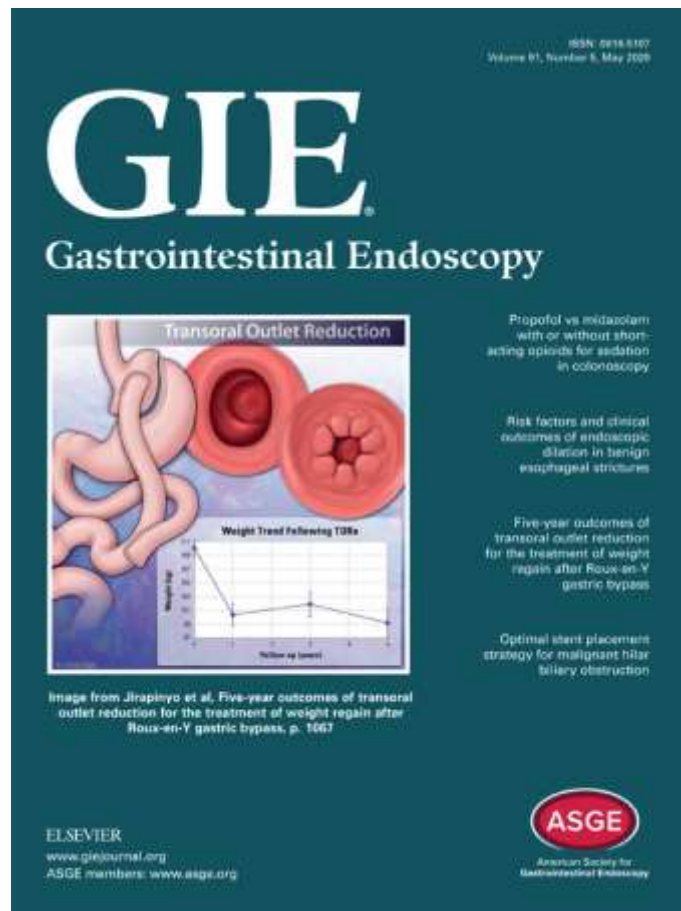
TABLE 3. Results from univariable and multivariable regression analyses

Risk factors	Univariate analysis		Multivariable analysis	
	Beta estimate	P value	Adjusted beta estimate	P value
Age, y	-.02 ± .05	NS	.02 ± .10	NS
Male, n	1.93 ± .61	NS	2.34 ± 1.59	NS
Percent regain after initial RYGB	.03 ± .01	<.01*	.03 ± .01	<.01*
Technique (interrupted = reference)	3.20 ± 1.23	.01*	3.51 ± 1.26	<.01*
Pre-GJA size	-.19 ± .21	NS	.05 ± .09	NS

Five-year outcomes of transoral outlet reduction for the treatment of weight regain after Roux-en-Y gastric bypass

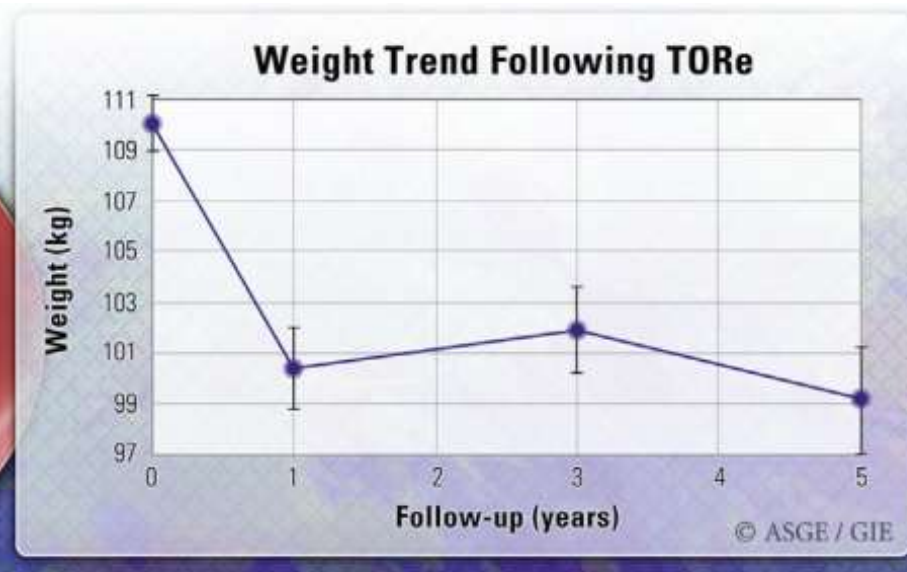
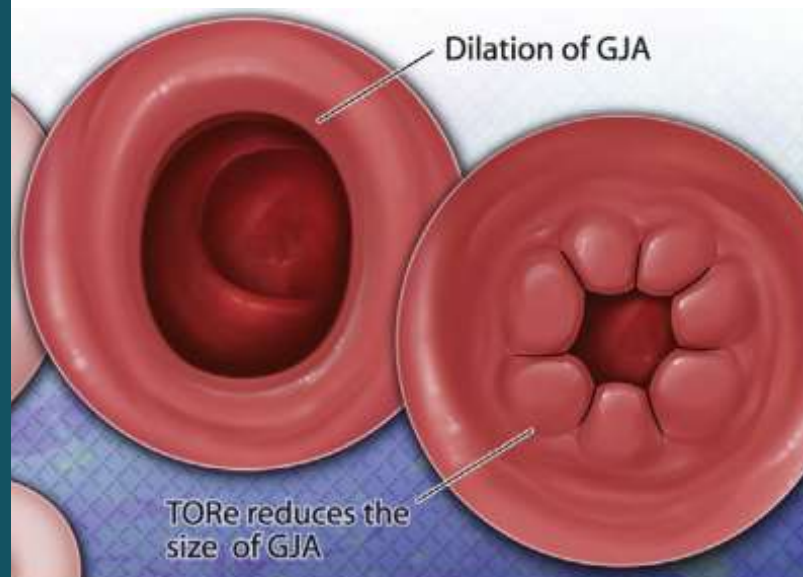
GIE
GASTROINTESTINAL ENDOSCOPY

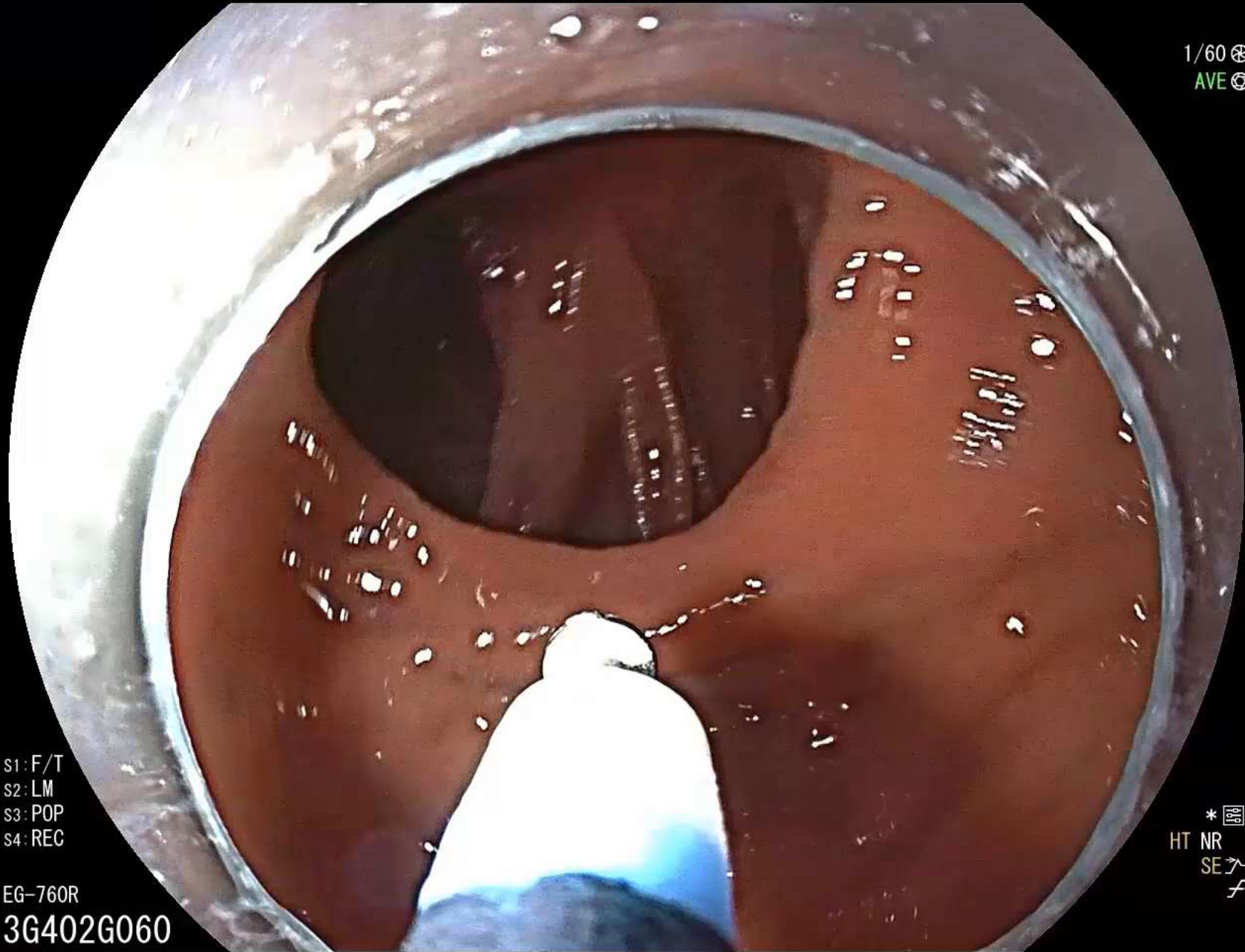
Pichamol Jirapinyo, MD, MPH,¹ Nitin Kumar, MD,² Mohd Amer AlSamman, MD,³
Christopher C. Thompson, MD, MSc¹



331 patients with baseline BMI of $40 \pm 9 \text{ kg/m}^2$

Efficacy at 5 years: **8.8% TWL (62% maintained 5% TWL)**





1/60 ⊗
AVE ⊙

S1: F/T
S2: LM
S3: POP
S4: REC

EG-760R
3G402G060

* ⊞
HT NR
SE ㄥ
ㄥ

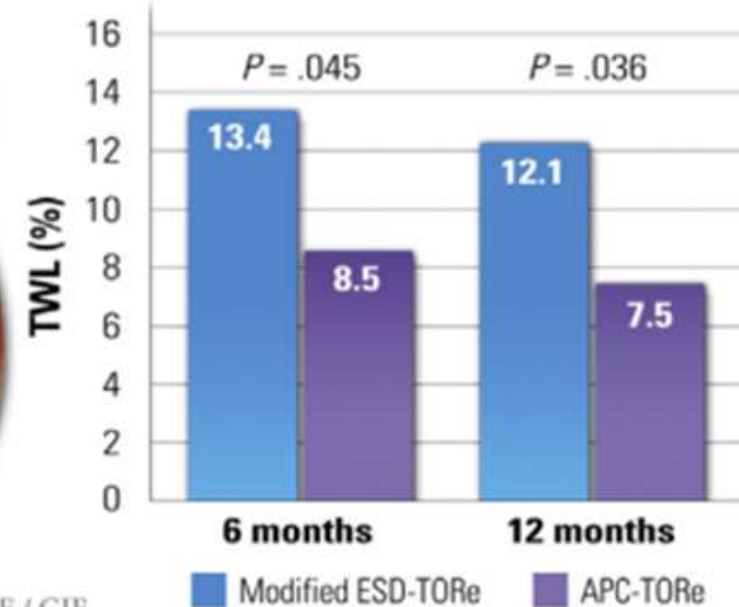
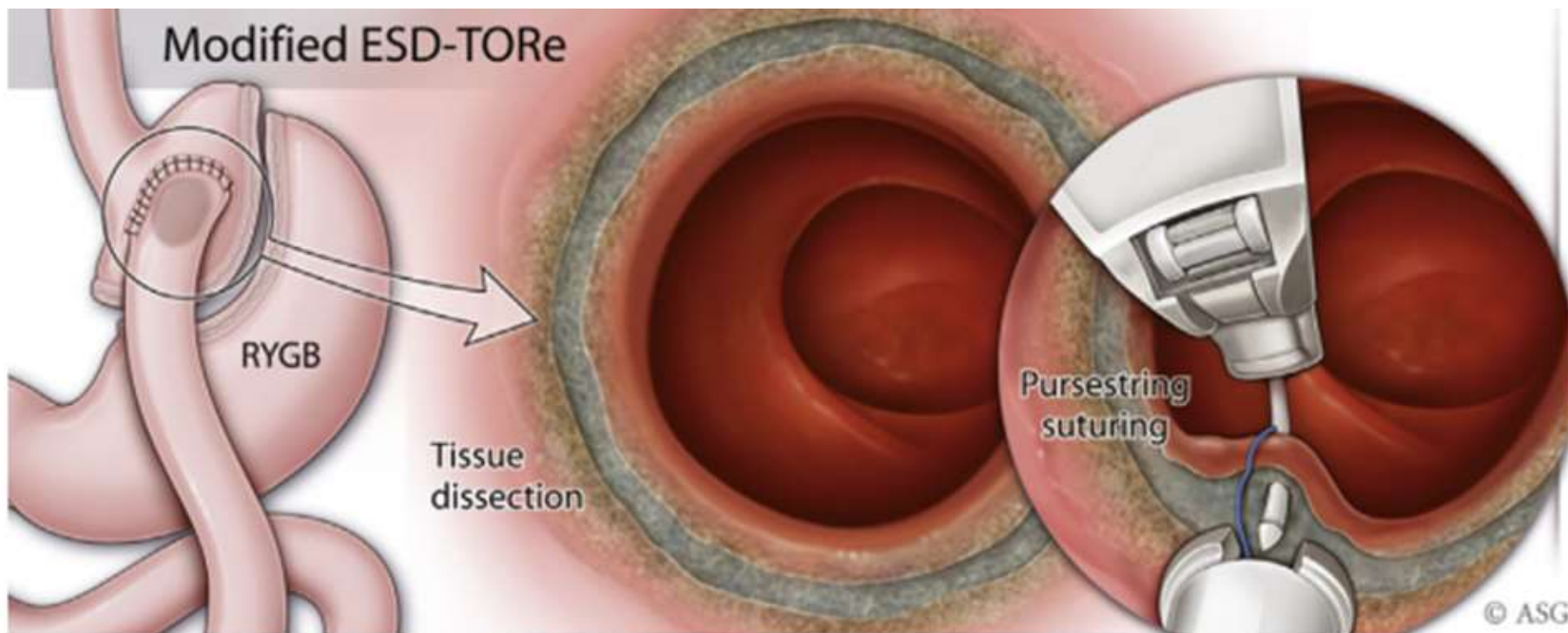
⊙ BL-7000

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Endoscopic submucosal dissection with suturing for the treatment of weight regain after gastric bypass: outcomes and comparison with traditional transoral outlet reduction (with video)

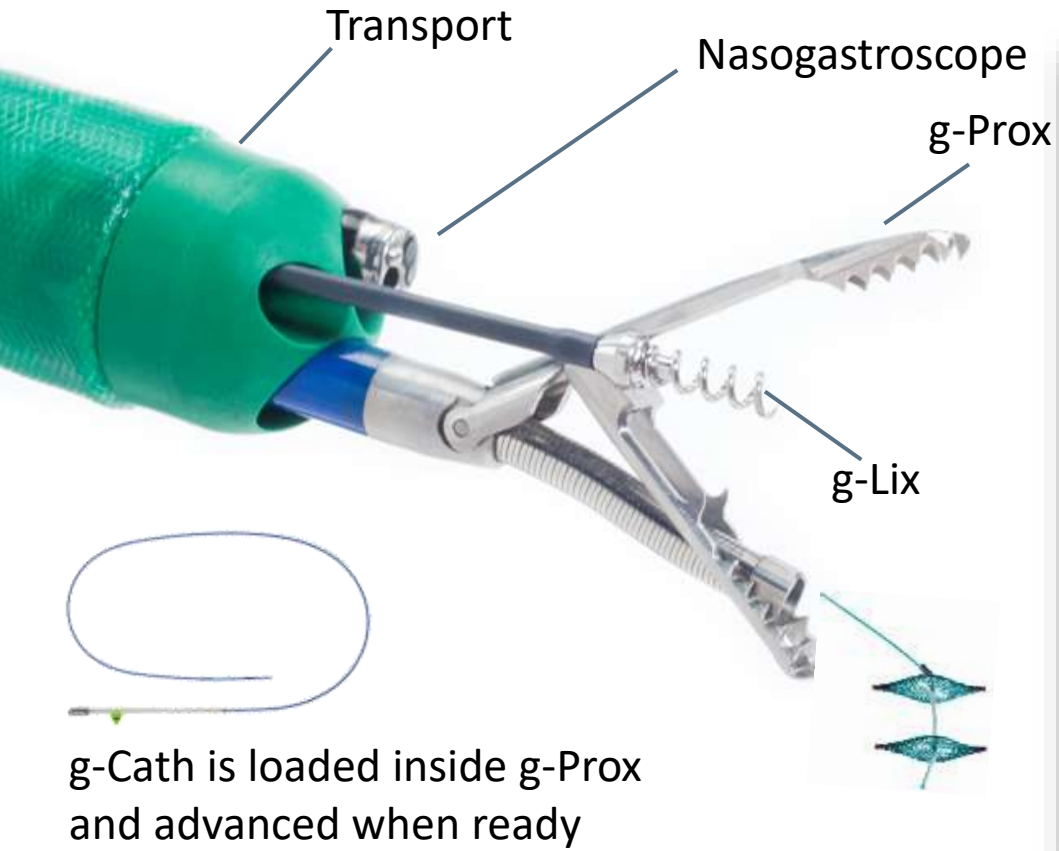
Pichamol Jirapinyo, MD, MPH,^{1,2} Diogo T. H. de Moura, MD, PhD,^{1,2,3} Christopher C. Thompson, MD, MSc^{1,2}

12% TWL



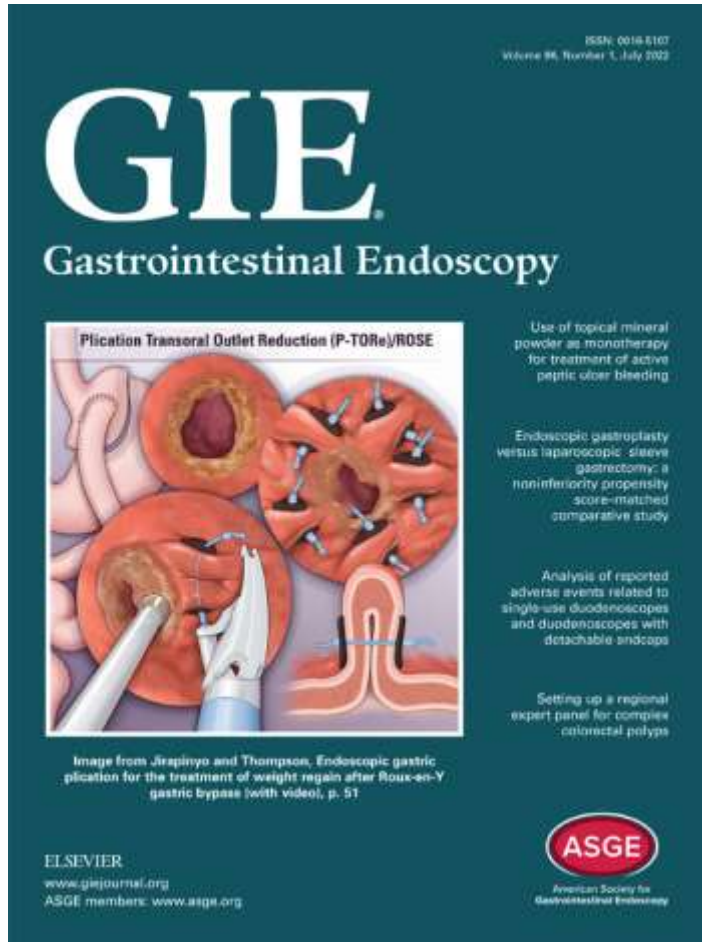
Matched based on GJA and pouch sizes

Plication (ROSE)



Endoscopic gastric plication for the treatment of weight regain after Roux-en-Y gastric bypass (with video)

Pichamol Jirapinyo, MD, MPH,^{1,2} Christopher C. Thompson, MD, MSc^{1,2}



Prospective registry study, patients with weight regain and an enlarged GJA undergoing ROSE with APC, N=111

Results

Of 111 patients, 108 and 88 patients were eligible for 6- and 12-month follow-up

- At 6 months, weight gain was prevented in 92.7% with a NNT of 1.1
 - Patients lost 11kg, which corresponded to 10.1% TWL (P < .0001)
 - Seventy-eight percent of the cohort experienced at least 5% TWL
- At 1 year, weight gain was prevented in 89.1%, with a NNT of 1.1
 - On average, patients lost 10.4kg, corresponded to **9.5% TWL** (P < .0001)
 - **73%** percent of the cohort experienced at least 5% TWL
- Overall AE rate was 12.6%, including GJA **stenosis (9.9%)**, melena because of marginal ulceration (1.8%), and deep vein thrombosis (.9%)
- The severe AE rate was 0%

Argon plasma coagulation alone versus argon plasma coagulation plus full-thickness endoscopic suturing to treat weight regain after Roux-en-Y gastric bypass: a prospective randomized trial (with videos)

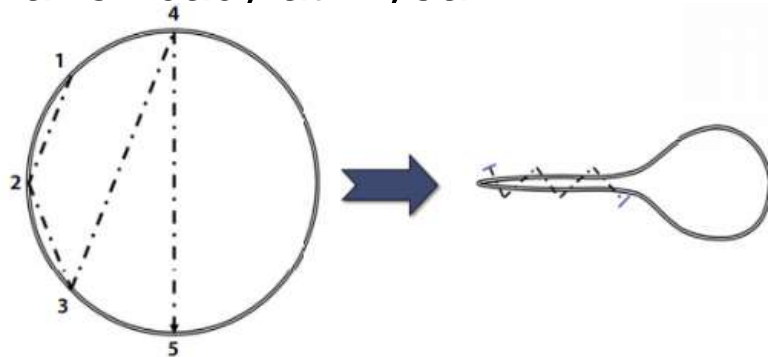


Vitor Ottoboni Brunaldi, MD, MSc,^{1,2} Galileu Ferreira Ayala Farias, MD,¹ Daniel Tavares de Rezende, MD,¹ Gabriel Cairo-Nunes, RD,¹ Daniel Riccioppo, MD, PhD,³ Diogo Turiani Hourneaux de Moura, MD, MSc, PhD,¹ Marco Aurelio Santo, MD, PhD,³ Eduardo Guimarães Hourneaux de Moura, MD, MSc, PhD¹

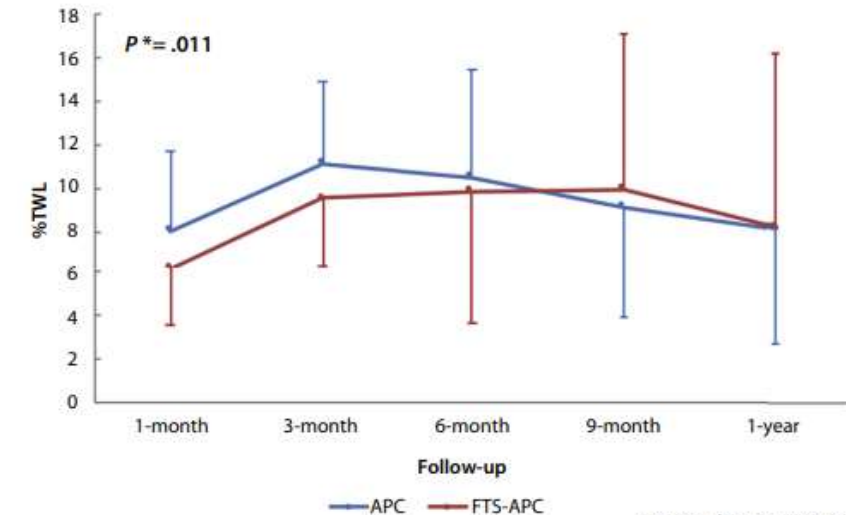
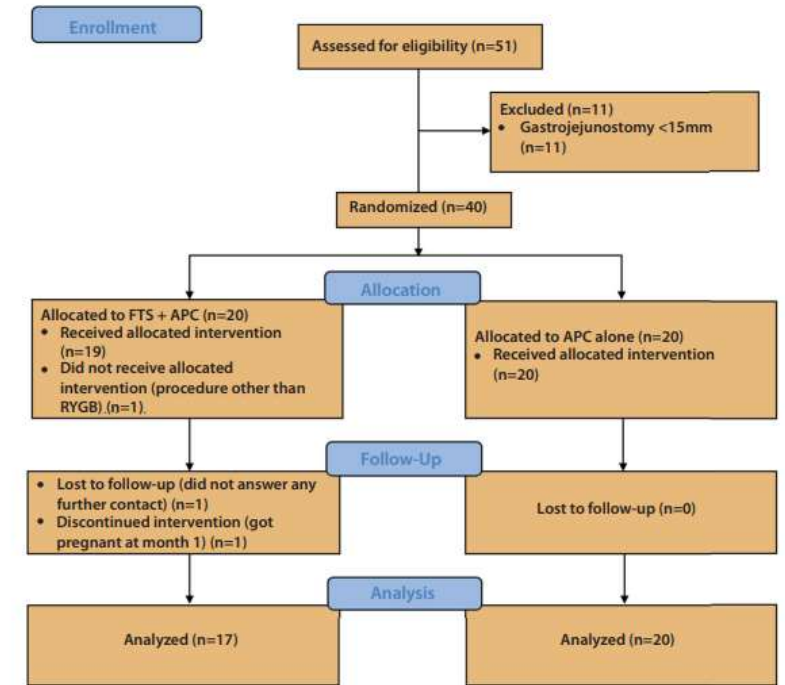
A pilot, single-center, randomized trial comparing APC to TORe

40 RYGB patients randomized (20 in the APC group and 20 patients in the TORe group)

Similar efficacy at 1 year



Modified Figure-of-eight Pattern

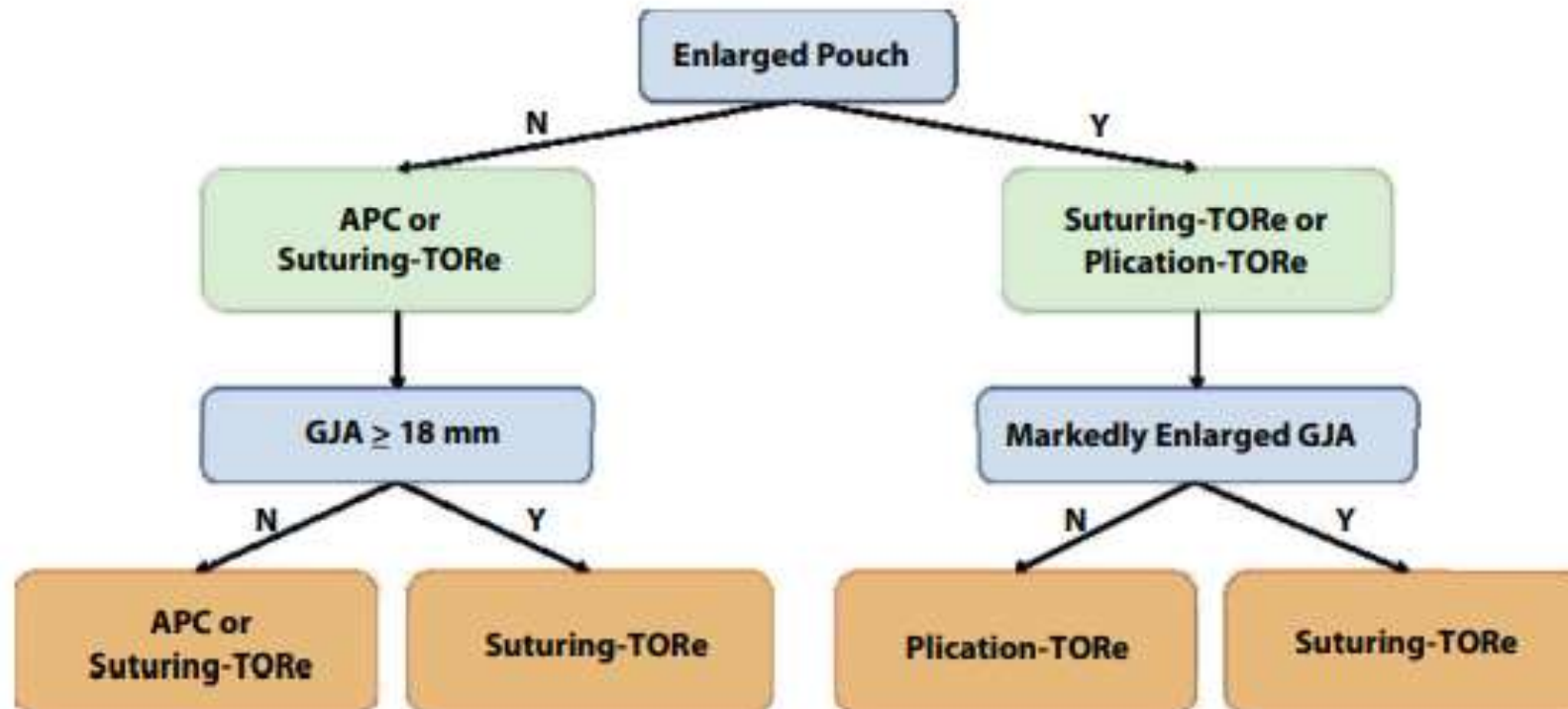


* Repeated measures ANOVA

Dose response for argon plasma coagulation in the treatment of weight regain after Roux-en-Y gastric bypass



Pichamol Jirapinyo, MD, MPH,^{1,2} Diogo T. H. de Moura, MD, PhD,^{1,2,3} William Y. Dong,⁴ Galileu Farias,³ Christopher C. Thompson, MD, MSc^{1,2}



Agenda

Techniques for TORe

Data for Dumping and Bile Reflux

Peroral endoscopic anastomotic reduction improves intractable dumping syndrome in Roux-en-Y gastric bypass patients

Gloria Fernández-Esparrach, M.D., Ph.D.^a, David B. Lautz, M.D.^b,
Christopher C. Thompson, M.D., M.Sc., F.A.C.G., F.A.S.G.E.^{a,*}

SURGERY FOR OBESITY
AND RELATED DISEASES



Surgery for Obesity and Related Diseases 6 (2010) 36–40

Original Report 2008

Case series (N=6) with intractable dumping symptoms

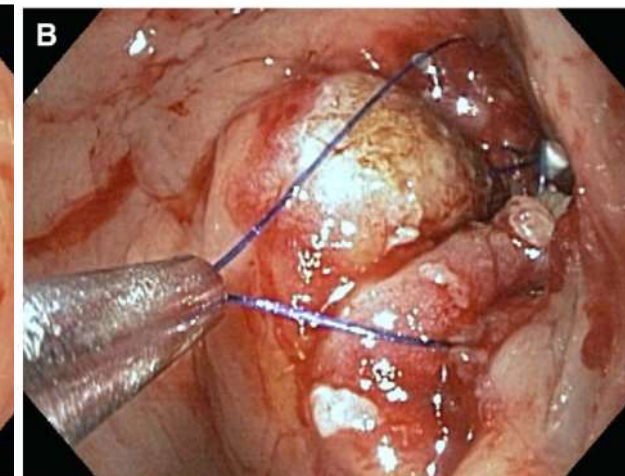
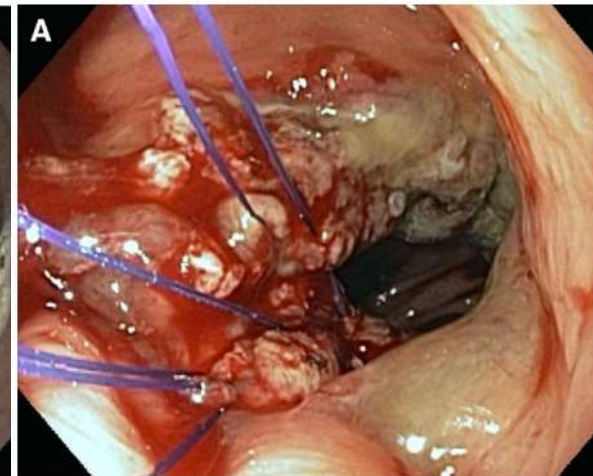
Results

- 6/6 patients remained symptom free at a median follow-up of 636 days
- Final mean BMI at the last follow-up visit was not significantly different from baseline ($p= 0.35$)

Patient characteristics

Pt. No.	Age (y)	Gender	Original surgery (type/date)	Endoscopy date	BMI (kg/m ²)	GJ anastomosis (mm)	Symptoms
1	37	Female	—/March 2000	June 2006	32.7	18	Severe diarrhea, nausea, hypoglycemia, diaphoresis
2	42	Female	Laparoscopic/Feb 2005	Oct 2006	31.3	20	Severe diarrhea, nausea, shaking, palpitations
3	55	Female	Laparoscopic/May 2004	July 2005	30.5	25	Severe diarrhea, nausea
4	41	Female	Laparoscopic/May 2003	Aug 2005	26.3	20	Severe diarrhea, nausea
5	33	Female	Open/June 2002	April 2006	41.5	25	Severe diarrhea, nausea
6	63	Female	Open/Sep 2003	Jan 2006	44.9	30	Severe diarrhea, nausea

Pt. No. = patient number; BMI = body mass index; GJ = gastrojejunal.



Endoscopic revision of gastrojejunal anastomosis for the treatment of dumping syndrome in patients with Roux-en-Y gastric bypass: a systematic review and meta-analysis



Ahmad Najdat Bazarbashi¹ · Russell D. Dolan¹ · Thomas R. McCarty¹ · Pichamol Jirapinyo¹ · Christopher C. Thompson¹

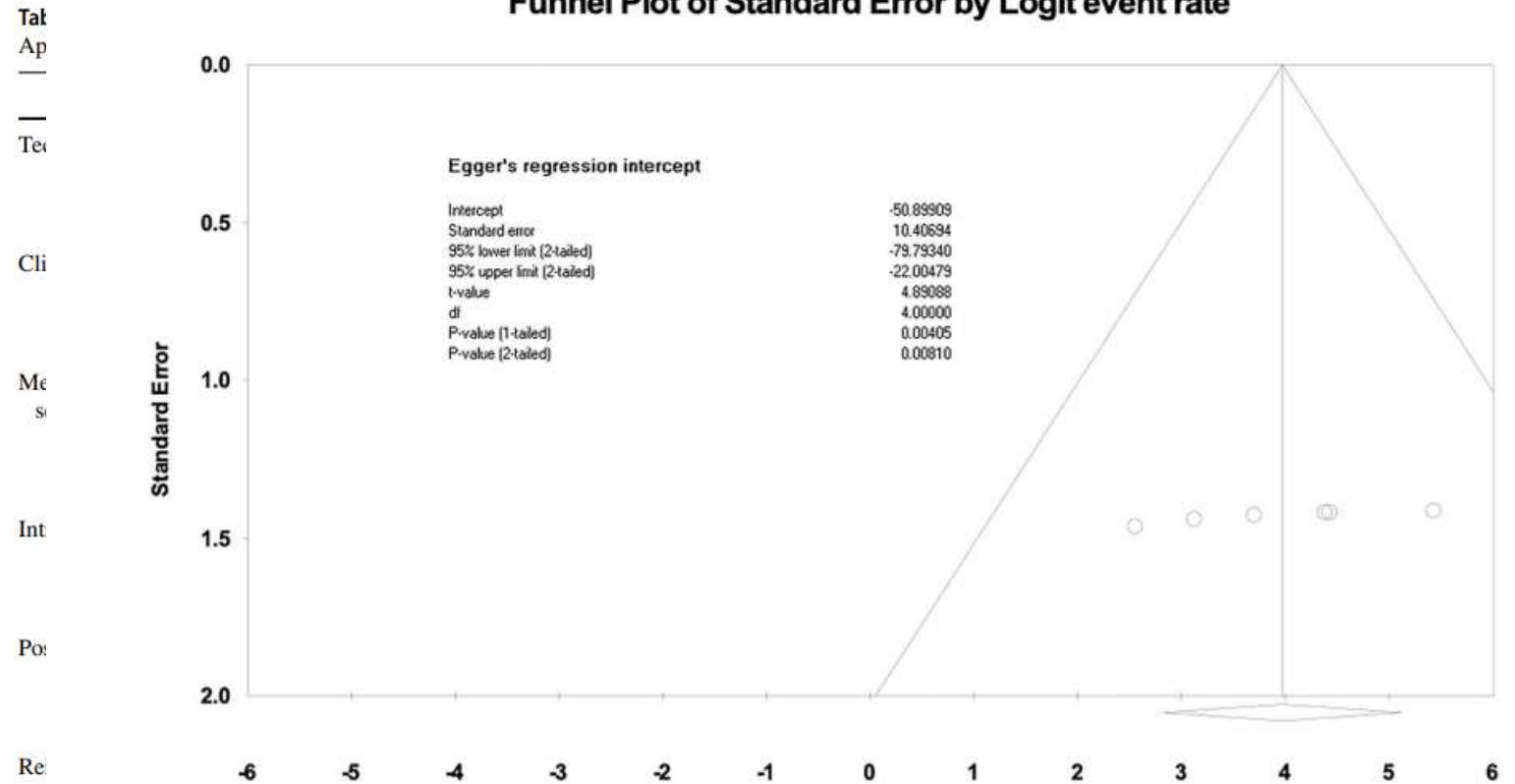
Surgical Endoscopy (2022) 36:4099–4107

Total of 6 studies (n=263)
1 prospective study, no RCTs

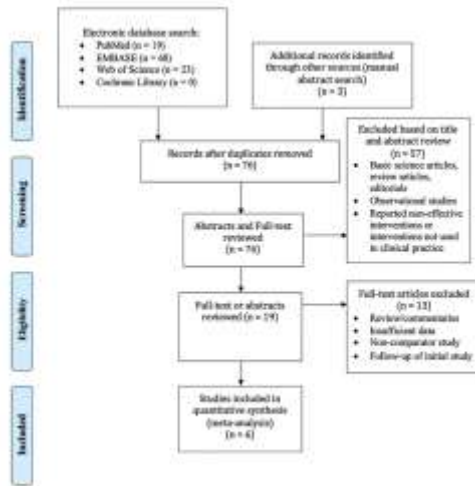
TOR – 4 (2 purse-string / 2 interrupted)

Plication – 2 (1 USGI / 1 StomaphyX)

Funnel Plot of Standard Error by Logit event rate



Logit event rate No evidence of publication bias



Long-term Outcomes of Transoral Outlet Reduction (TORe) for Dumping Syndrome and Weight Regain After Roux-en-Y Gastric Bypass

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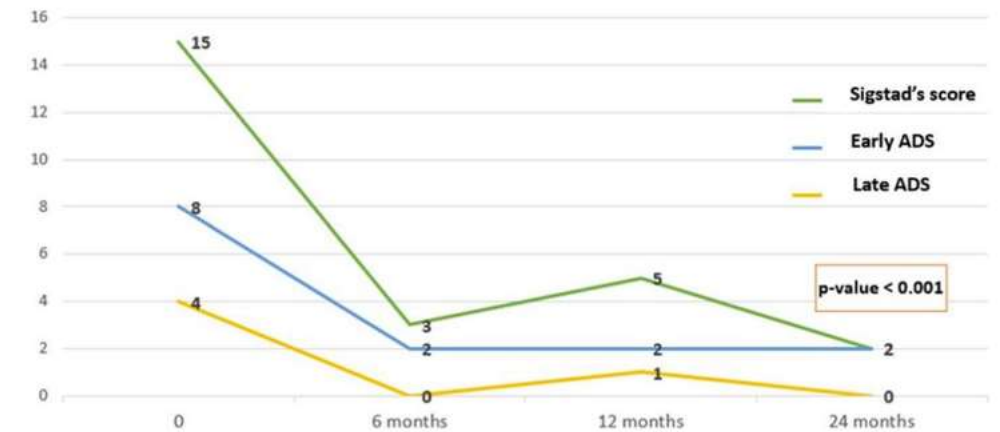
Obesity Surgery (2023) 33:1032–1039

Retrospective analysis of prospective registry N=87 (46 years, 79% female, median baseline BMI 36.2 kg/m²)

- 58/87 classified as “dumpers” due to Sigstad’s score ≥ 7
- Overstitch with interrupted sutures (2-3) with APC for tissue preparation

Results

- The median Sigstad’s score dropped from **15** (11–8.5) pre-operatively to **2** (0–12) at 24 months (**p < 0.001**)
- Resolution of DS (Sigstad’s score < 7) was 68.9%, 66.7%, and **57.2%** at 6, 12, and 24 months after TORe
- The %TBWL was 10.5%, 9.9%, and **8.1%** at 6, 12, and 24 months
- Patients with resolution of DS showed better weight loss results compared with those with persistent DS (**p < 0.001**)



	6 months	12 months	24 months	p [#]
AWL (kg)	11 (4–14)	10 (1–15)	8 (3–14)	< 0.001
EWL (%)	30.2 (14–44.8)	33.7 (3.8–48.7)	34.2 (9.9–57.8)	< 0.001
TBWL (%)	10.5 (4.1–13.7)	9.9 (1.1–14.3)	8.1 (3.1–13.3)	< 0.001

Endoscopic Transoral Outlet Reduction for the Treatment of Biliary Reflux Symptoms in Patients After One-Anastomosis Gastric Bypass—a Case Series

Relly Reicher¹ · Nathaniel A. Cohen¹ · Sigal Fishman¹ · Mati Shnell¹



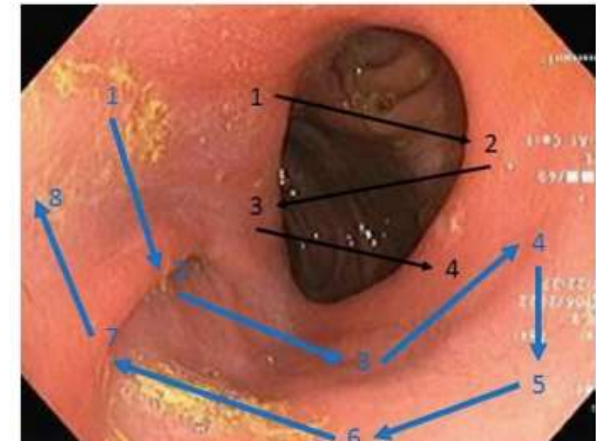
Obesity Surgery (2023) 33:870–878

Prospective series post-OAGB bile reflux treated with TORe (N=12)

- Bile reflux defined by GERD-HRQL and failure of high dose PPI therapy

Results

- TORe using a unique pattern to narrow and elongate the GJA
- Technical success 100% (Diameter <10mm)
- Symptoms resolved in **9 (75%)**
- GERD-HRQL score at 6 months declined from **33.7 to 16.1** ($p < 0.001$)
- TWL **8%** at 12 months



Conclusion

TORe is effective for recurrence of weight gain and for symptoms of dumping syndrome

- Technique may be less important for dumping symptom resolution than for weight loss

Evidence for TORe in the treatment of bile reflux is less well developed but encouraging

Thank you!



@MetabolicEndo

