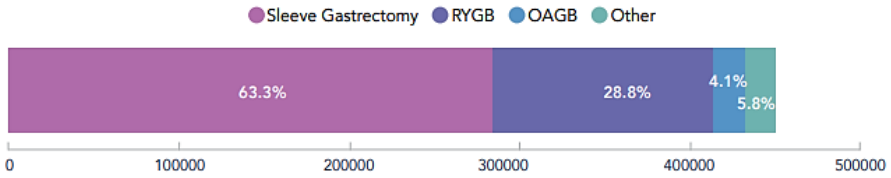
Dr Muffazal Lakdawala – Sir H N Reliance Foundation Hospital and Research Centre, Mumbai, India.

Redo for Recurrent Weight Gain after RYGB

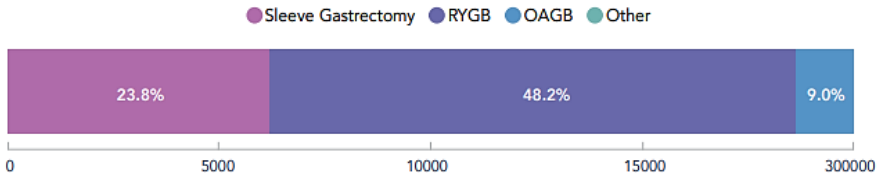
I have no potential conflict of interest to report

Primary procedures



Primary procedure types (n=449,583). *potential for procedures to be represented twice due to possible overlaps with the datasets of USA and Michigan

Revisional procedures



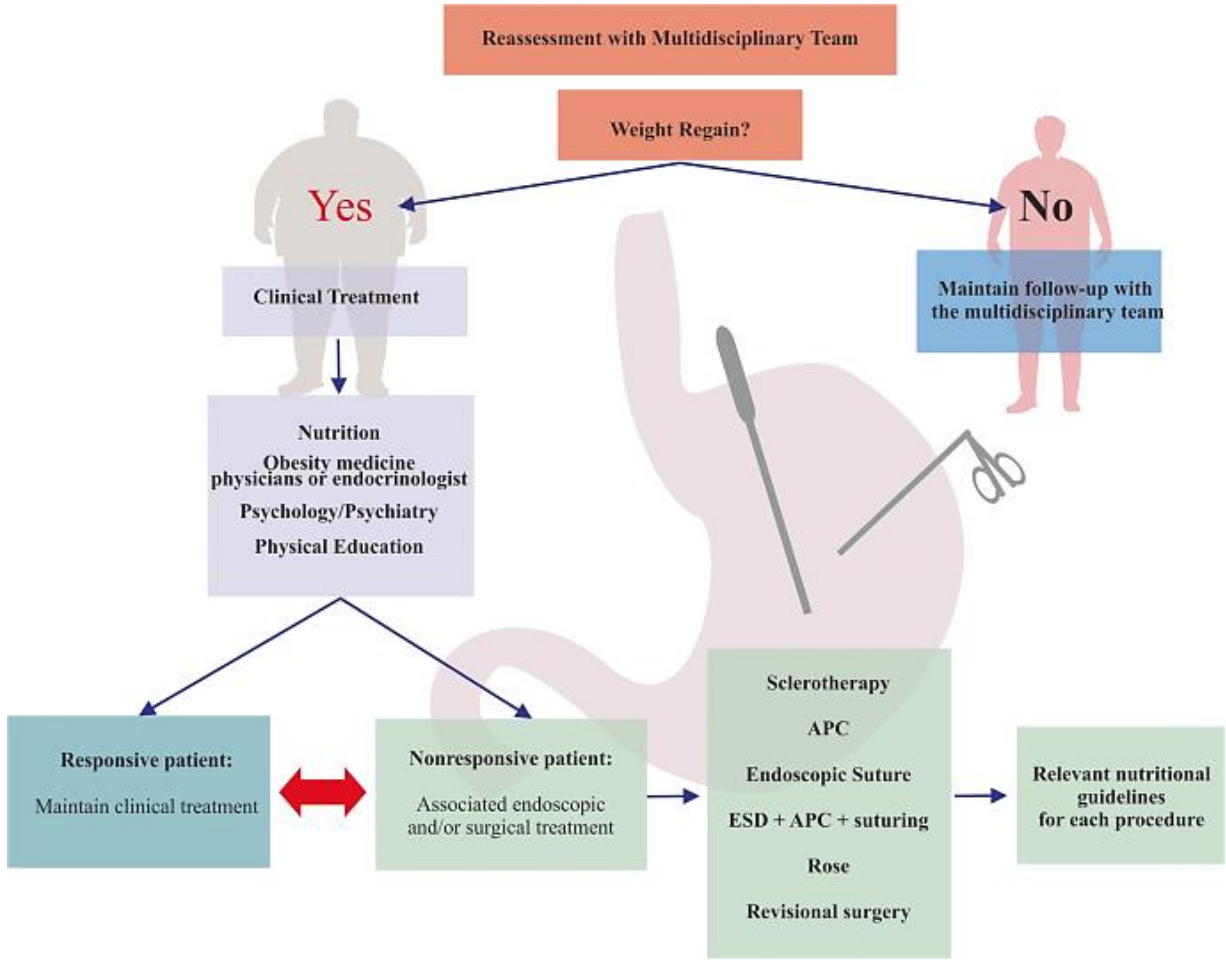
Revisional procedures (n=19,814). For all countries apart from the USA (n=5,435 excluded from analysis as no breakdown provided).

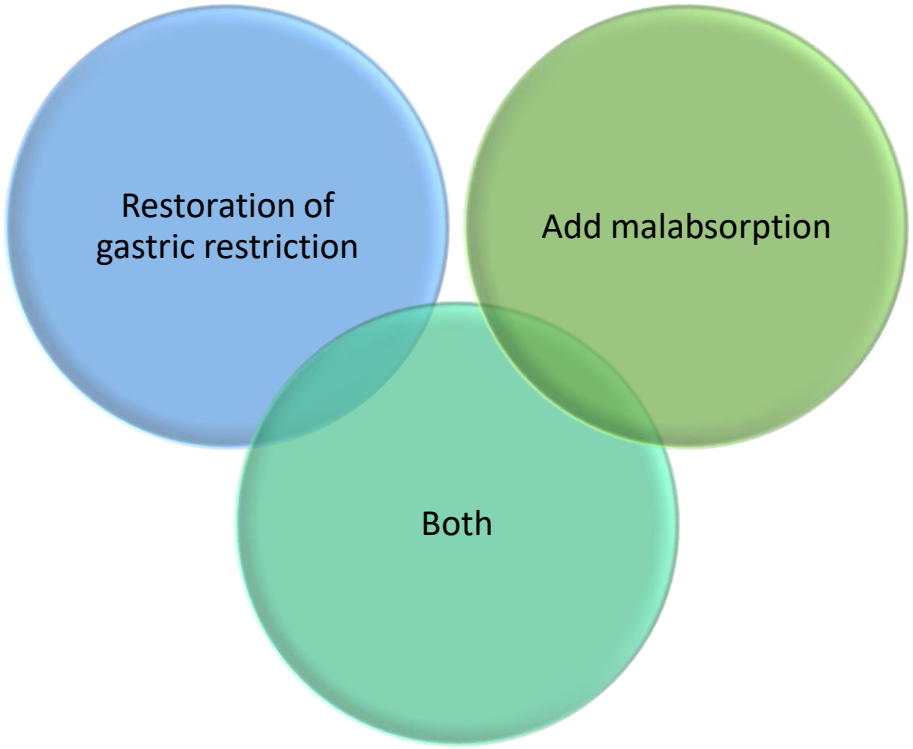
(8th IFSO Global Registry, 2023)

Review > Obes Surg. 2021 Mar;31(3):1290-1303. doi: 10.1007/s11695-020-05164-1.
Epub 2021 Jan 3.

Multidisciplinary Approach for Weight Regain-how to Manage this Challenging Condition: an Expert Review

Maria Paula Carlin Cambi [1], Giorgio Alfredo Pedroso Baretta [1], Daniéla De Oliveira Magro [2], Cesar Luiz Boguszewski [3], Igor Braga Ribeiro [4], Pichamol Jirapinyo [5], Diogo Turiani Hourneaux de Moura [6 5]




Restoration of gastric restriction
Add malabsorption
Both

Review > Isr Med Assoc J. 2019 Dec;21(12):823-828.

Weight Regain Following Roux-en-Y Gastric Bypass: Etiology and Surgical Treatment

Danit Dayan [1], Joseph Kuriansky [1], Subhi Abu-Abeid [1]

Route	Restriction improvement	Malabsorption intensification
Endoluminal	Sclerotherapy Tissue plication techniques • TORe: trans oral outlet reduction • EGP: endoscopic gastric plication • ROSE: restorative obesity surgery endoscopic	None
Transabdominal	Open gastrojejunal complex reconstruction Laparoscopic • Gastrojejunal complex reconstruction • Gastrojejunal sleeve reduction • Gastric pouch resizing • Gastric pouch salvage banding	Conversion to distal gastric bypass • Type I: long biliopancreatic limb (Sugerman [29]) • Type II: long alimentary limb (Brolin [30]) • Conversion to biliopancreatic diversion with duodenal switch

The rate of revision is variable between 10 – 35%. (Lim C. H. S., et al. 2009; Rawlings, M. L., et al. 2011; Tran, D.D., et al. 2016)

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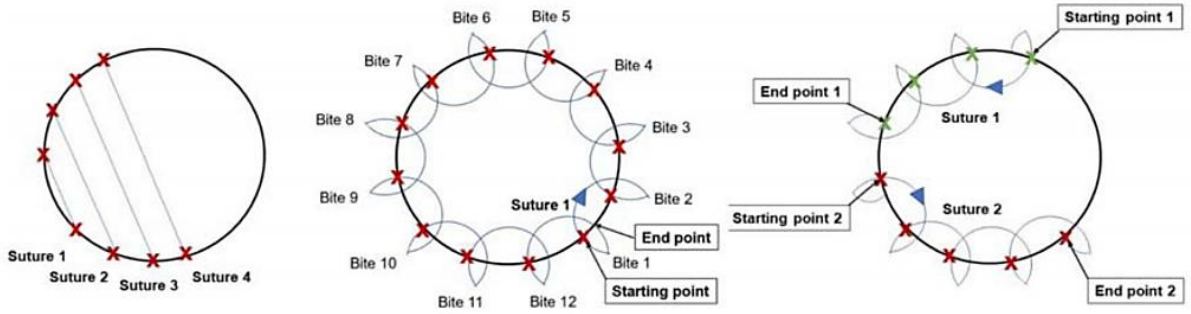
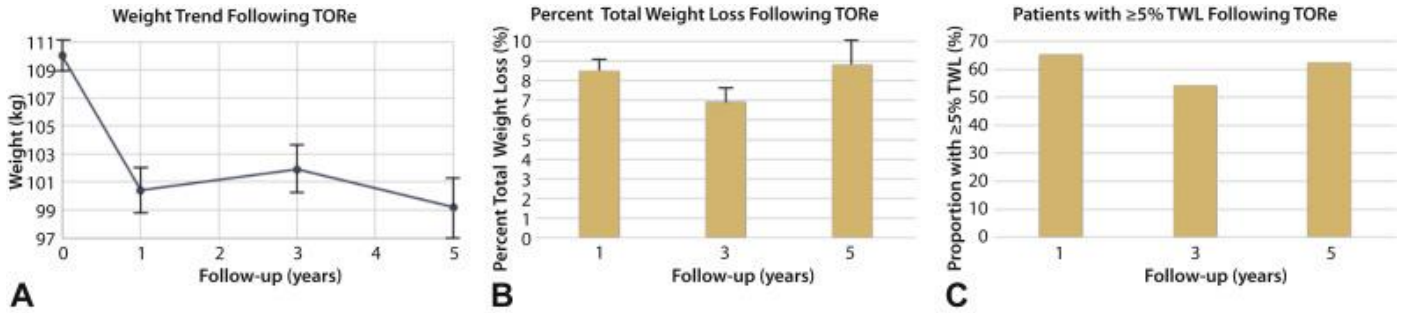
Gastrointest Endosc. 2020 May;91(5):1067-1073. doi: 10.1016/j.gie.2019.11.044. Epub 2019 Dec 7.

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

Pichamol Jirapinyo [1], Nitin Kumar [2], Mohd Amer AlSamman [3], Christopher C Thompson [1]

Suture patterns used for transoral outlet reduction (TORe) - interrupted, pursestring and running patterns





Long-term efficacy of transoral outlet reduction (TORe) at treating weight regain after Roux-en-Y gastric bypass (RYGB).A. Weight (kg) plotted by time (mean ± standard error of the mean), **B.** Percent total weight loss and **C.** patients with ≥5 %TWL following TORe.

Surg Endosc. 2020 May;34(5):2164-2171. doi: 10.1007/s00464-019-07003-6. Epub 2019 Jul 25.

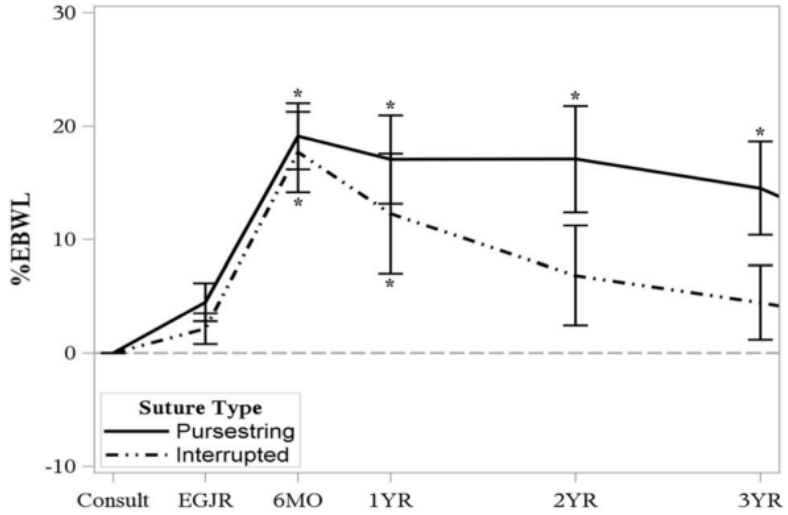
Five-year results of endoscopic gastrojejunostomy revision (transoral outlet reduction) for weight gain after gastric bypass

Zachary M Callahan [1], Bailey Su [2], Kristine Kuchta [2], John Linn [2], JoAnn Carbray [2], Michael Ujiki [2]

	Sample size	Weight loss (kg)	Percent excess body weight loss (% ± SD)
Consult	70	0.0 ± 0.0	0.0 ± 0.0
EGJR	70	2.3 ± 5.7	3.5 ± 9.5
6 months	66	10.7 ± 11.6	18.5 ± 18.2
1 year	42	8.5 ± 11.5	14.9 ± 20.6
2 years	36	6.9 ± 10.7	12.2 ± 19.8
3 years	31	5.3 ± 9.1	8.7 ± 14.9
4 years	23	3.1 ± 12.0	3.2 ± 21.6
5 years	18	3.9 ± 13.1	7.0 ± 23.8

EGJR endoscopic gastrojejunostomy revision

Weight loss and percent excess body weight loss after EGJR



Percent excess body weight loss (%EBWL), purse string versus interrupted suture pattern. Using consult weight as the reference, **the purse string method provided greater %EBWL at all time points**. While the interrupted suture pattern also demonstrated significant %EBWL at 6 months and 1 year, this weight loss was not sustained in the long term. EGJR endoscopic gastrojejunostomy revision, *Statistical significance

Surg Endosc. 2020 May;34(5):2164-2171. doi: 10.1007/s00464-019-07003-6. Epub 2019 Jul 25.

Five-year results of endoscopic gastrojejunostomy revision (transoral outlet reduction) for weight gain after gastric bypass

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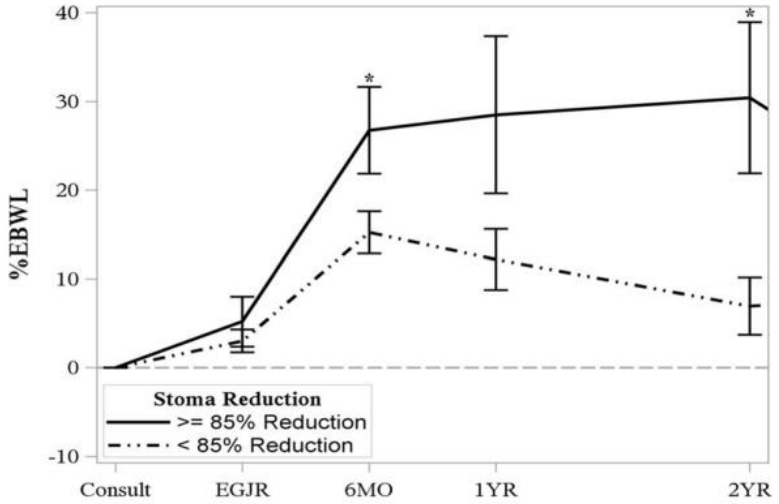


Percent excess body weight loss, stoma reduction. Patients who underwent≥85% reduction in stoma diameter sustained superior weight loss at 6 months, 1 year, and 2 years after revision compared to

	GG fistula absent		GG fistula present		*P* value
	N	%EBWL (mean ± SD)	*N*	%EBWL (mean ± SD)	
Consult	61	0	9	0	–
EGJR	61	4.2 ± 9.8	9	-0.9 ± 5.3	0.03*
6 months	57	19.2 ± 18.9	9	13.8 ± 13.0	0.41
1 year	36	16.0 ± 21.7	6	8.5 ± 12.2	0.42
2 years	29	11.0 ± 21.3	7	17.2 ± 11.6	0.47
3 years	25	8.1 ± 14.0	6	11.1 ± 19.8	0.66

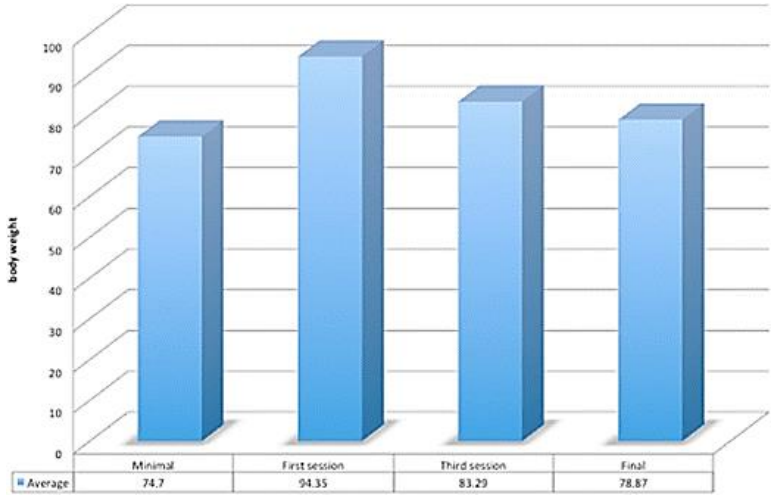
EGJR endoscopic gastrojejunostomy revision, GG gastrogastric fistula, %EBWL percent excess body weight loss. *Statistical significance

The study demonstrated weight loss in patients up to 5 years after EGJR but with minimal effect on medical comorbidities. These results suggest that EGJR, particularly the purse string method with large reduction in stoma diameter, is a safe and effective treatment option for the challenging patient population that experiences weight gain after gastric bypass.

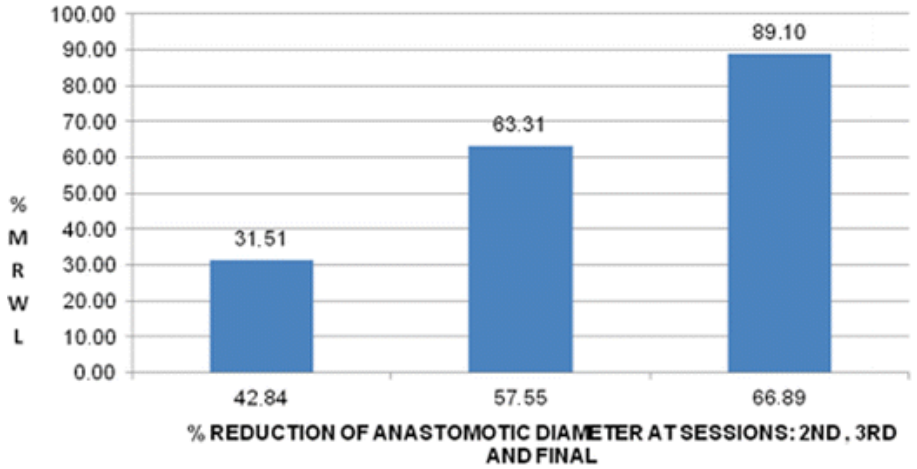
Clinical Trial > Obes Surg. 2015 Jan;25(1):72-9. doi: 10.1007/s11695-014-1363-2.

Argon plasma coagulation of gastrojejunal anastomosis for weight regain after gastric bypass

Giorgio A P Baretta [1], Helga C A W Alhinho, Jorge Eduardo F Matias, João Batista Marchesini, João Henrique F de Lima, Celso Empinotti, Josemberg M Campos



Comparison of weights during the treatment
(Minimal, first session, third session and final session)



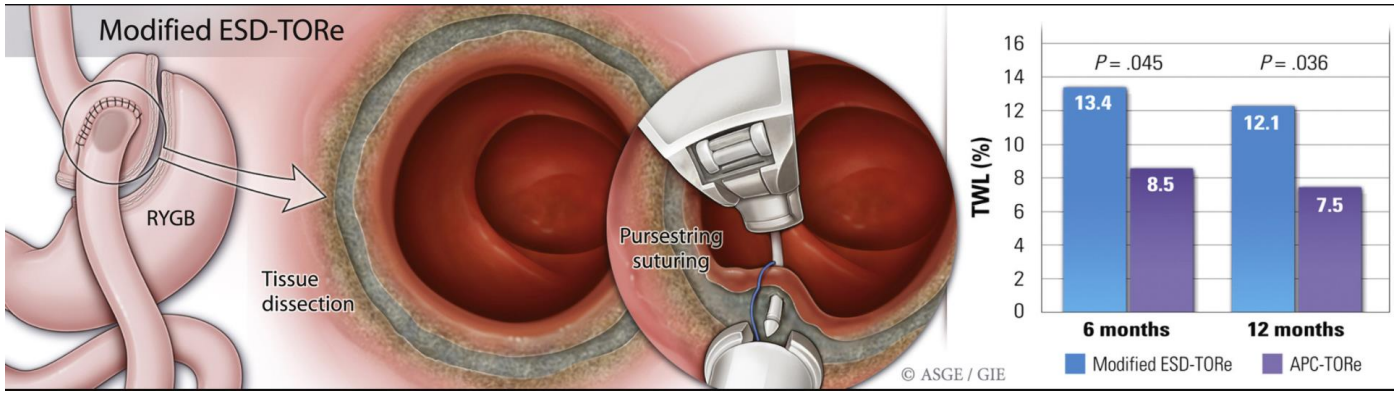
Percentage of reduction in anastomotic diameter versus %MRWL (%mean regained weight loss)

Study concluded that the use of APC to treat weight regain after RYGB is a safe and effective procedure and promotes a reduction in gastrojejunal anastomosis, final weight, and BMI, with a low rate of complications.

Comparative Study > Gastrointest Endosc. 2020 Jun;91(6):1282-1288.
doi: 10.1016/j.gie.2020.01.036. Epub 2020 Jan 31.

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 [1], Diogo T H de Moura [2], Christopher C Thompson [1]



TORe. Technical success rate was 100%, with no severe adverse events.

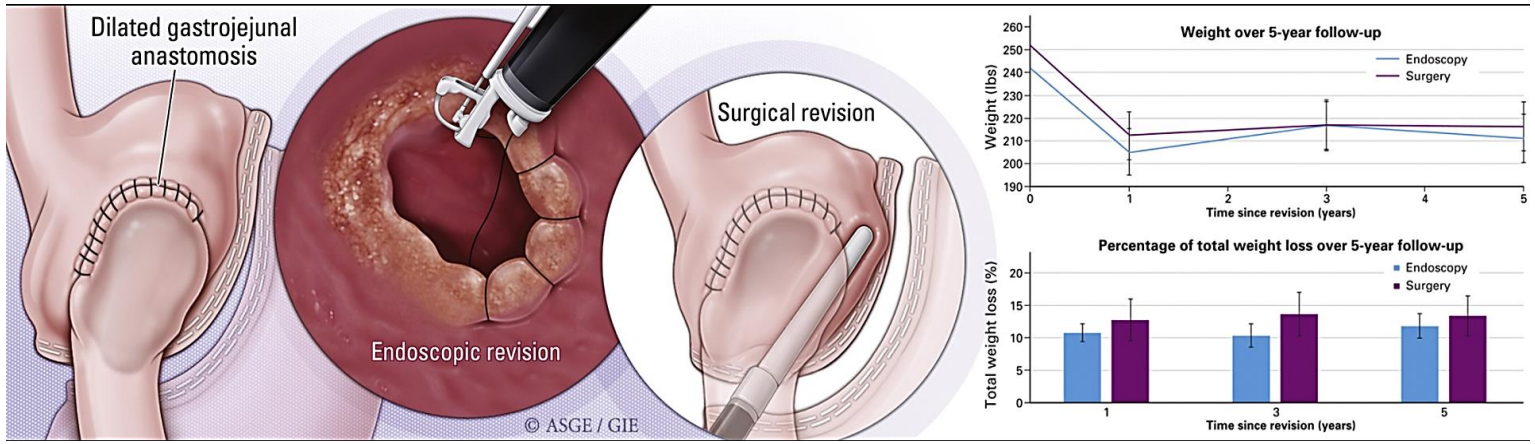
At 12 months, **the ESD-TORe group experienced greater weight loss compared with the APC-TORe group** (12.1% ± 9.3% vs 7.5% ± 3.3% TWL, respectively; P = .036).

Combining endoscopic tissue dissection with suturing provides greater and more durable weight loss for patients with weight regain after RYGB.

Gastrointest Endosc. 2021 Nov;94(5):945-950. doi: 10.1016/j.gie.2021.06.009. Epub 2021 Jun 12.

Endoscopic versus surgical gastrojejunal revision for weight regain in Roux-en-Y gastric bypass patients: 5-year safety and efficacy comparison

Russell D Dolan [1], Pichamol Jirapinyo [1], Christopher C Thompson [1]



Endoscopic revision of the gastrojejunal anastomosis has an improved safety profile, with fewer total and serious adverse events, compared with surgical revision yet provides similar long-term weight loss.

Weight loss between the 2 modalities appears to be similar at 1, 3, and 5 years.

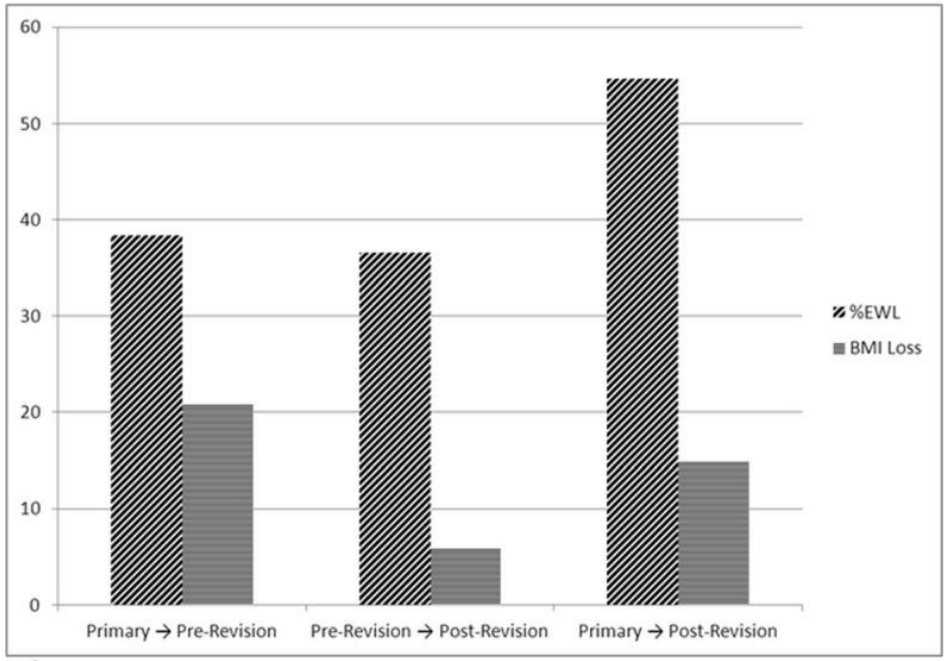
The overall adverse event rate was significantly lower in the ENDO group than the SURG group (6.5% vs 29.0%; p=0.04)

The Serious adverse event (SAE) rate was 0 (0%) and 6 (19.4%) in the ENDO and SURG groups, respectively (p=0.02)

Obes Surg. 2015 May;25(5):928-34. doi: 10.1007/s11695-015-1615-9.

Outcomes of revisional treatment modalities in non-complicated Roux-en-Y gastric bypass patients with weight regain

David Nguyen [1], Fernando Dip, Jorge A Huaco, Rena Moon, Hira Ahmad, Emanuele LoMenzo, Samuel Szomstein, Raul Rosenthal



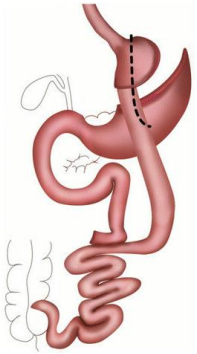
Graphical representation of mean %EWL and BMI loss (kg/m2) at the three different time periods

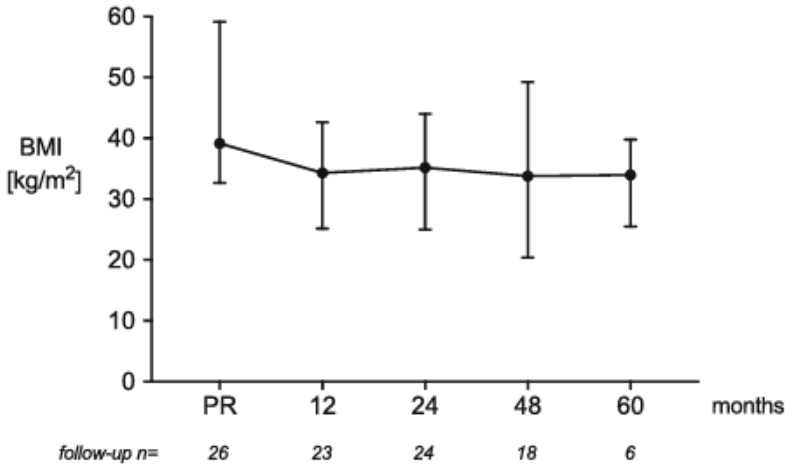
Trimming of the pouch and/or anastomosis appears to be a safe and effective revisional modality for patients with insufficient weight loss or weight regain after gastric bypass in the hands of experienced surgeons.

Obes Surg. 2017 Feb;27(2):439-444. doi: 10.1007/s11695-016-2329-3.

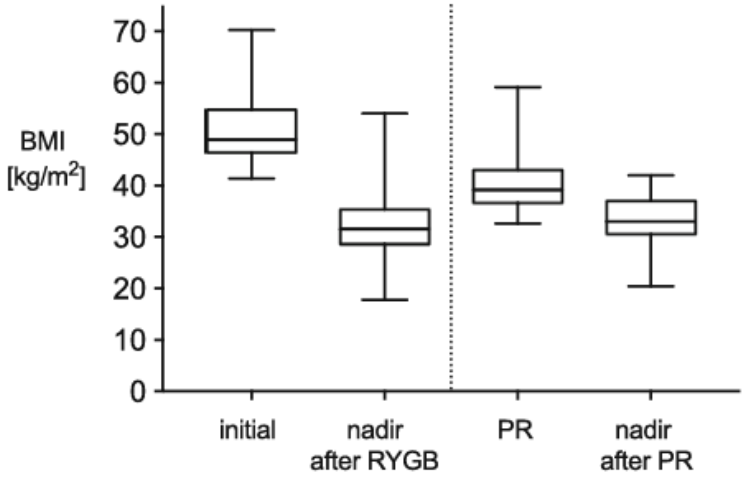
Pouch Reshaping for Significant Weight Regain after Roux-en-Y Gastric Bypass

Yves Borbély [1], Carmen Winkler [2], Dino Kröll [2], Philipp Nett [2]





Evolution of body mass index (BMI) after pouch reshaping (PR)



Body mass index (BMI) during follow-up (n=26 at all time points). RYGB Roux-en-Y gastric bypass, PR pouch reshaping

Minor complications (grade ≤ 2) occurred in seven (27 %) patients and major complications (grade ≥ 3) in four patients (15 %).

Comorbidities were resolved in 81 %. After 48 months, median BMI was 33.8 kg/m² (20.4-49.2) and %EBMIL was 61.4 (39.1-121.2)

PR leads to prolonged weight stabilization around the previous nadir. However, its associated perioperative morbidity must not be disregarded.

› Obes Surg. 2015 May;25(5):928-34. doi: 10.1007/s11695-015-1615-9.

Outcomes of revisional treatment modalities in non-complicated Roux-en-Y gastric bypass patients with weight regain

David Nguyen [1], Fernando Dip, Jorge A Huaco, Rena Moon, Hira Ahmad, Emanuele LoMenzo, Samuel Szomstein, Raul Rosenthal

%EWL shown as mean ± standard deviation

	Number of patients, *N*=44	Total mean %EWL for all time periods	%EWL from primary operation to pre-revision	%EWL from pre-revision to post-revision*	%EWL from primary operation to post-revision
Group A	*N*=30 (68.1 %)	42.3 (±13.6)	42.6 (±16.0)	28.6 (±21.6)	55.8 (±14.1)
Group B	*N*=8.0 (18.1 %)	54.3 (±4.2)	51.7 (±0)	52.0 (±41.8)	59.1 (±0)
Group C	*N*=6.0 (13.6 %)	29.6 (±19.9)	8.1 (±36.2)	33.4 (±23.4)	47.3 (±29.6)
Total mean %EWL for all groups			34.13 (±23.0)	38 (±12.35)	54.0 (±6.0)

Group A trimming of the pouch with or without redo GJ anastomosis (TPA), **Group B** TPA and rerouting of the Roux limb from retrocolic retrogastric to antecolic antegastric, **Group C** TPA with remnant gastrectomy. Follow-up in the post-revision stage is 6, 12, 18, 24, 36, and 48 months *p=0.096

Obes Surg. 2015 May;25(5):928-34. doi: 10.1007/s11695-015-1615-9.

Outcomes of revisional treatment modalities in non-complicated Roux-en-Y gastric bypass patients with weight regain

David Nguyen [1], Fernando Dip, Jorge A Huaco, Rena Moon, Hira Ahmad, Emanuele LoMenzo, Samuel Szomstein, Raul Rosenthal

BMI loss (BMIL) shown as mean ± standard deviation

	Number of patients, *N*=44	Total mean BMIL for all time periods	BMIL from primary operation to pre-revision	BMIL from pre-revision to post-revision*	BMIL from primary operation to post-revision
Group A	*N*=30 (68.1 %)	11.2 (±5.7)	13.0 (±8.0)	4.9 (±4.6)	15.8 (±7.5)
Group B	*N*=8 (18.1 %)	8.3 (±2.9)	5.2 (±11.6)	8.8 (±8.3)	10.8 (±12.4)
Group C	*N*=6 (13.6 %)	7.8 (±4.8)	4.3 (±10.4)	5.9 (±6.1)	13.3 (±8.5)
Total mean BMIL for all groups			7.5 (±4.7)	6.5 (±2.0)	13.3 (±2.5)

Group A trimming of the pouch with or without redo GJ anastomosis (TPA), **Group B** TPA and rerouting of the Roux limb from retrocolic retrogastric to antecolic-antegastric, **Group C** TPA with remnant gastrectomy. Follow-up in the post-revision stage is 6, 12, 18, 24, 36, and 48 months *p=0.227

Surg Obes Relat Dis. 2018 Oct;14(10):1501-1506. doi: 10.1016/j.soard.2018.07.019. Epub 2018 Jul 30.

Long-term results for gastric banding as salvage procedure for patients with weight loss failure after Roux-en-Y gastric bypass

Shinban Liu [1], Christine J Ren-Fielding [2], Bradley Schwack [2], Marina Kurian [2], George A Fielding [2]

The mean body mass index before RYGB was 48.9 kg/m2.

Before LAGB, patients had an average **body mass index of 43.7 kg/m2**, with **10.4% total weight loss** and **21.4% excess weight** loss after RYGB.

At 5-year follow-up, patients (n = 20) had a mean **body mass index of 33.6 kg/m2** with **22.5% total weight loss** and **65.9% excess weight loss** after LAGB.

The long-term reoperation rate for complications related to LAGB was 24%, and 8% of patients ultimately had their gastric bands removed.

The results of the study show that LAGB had good long-term data as a revisionary procedure for weight loss failure after RYGB

Obes Surg. 2020 Mar;30(3):804-811. doi: 10.1007/s11695-019-04348-8.

Revisional Surgery for Insufficient Loss or Regain of Weight After Roux-en-Y Gastric Bypass: Biliopancreatic Limb Length Matters

Marko Kraljević [1], Thomas Köstler [1], Julian Süsstrunk [1], Ioannis I Lazaridis [2], Amy Taheri [3], Urs Zingg [1], Tarik Delko [4]

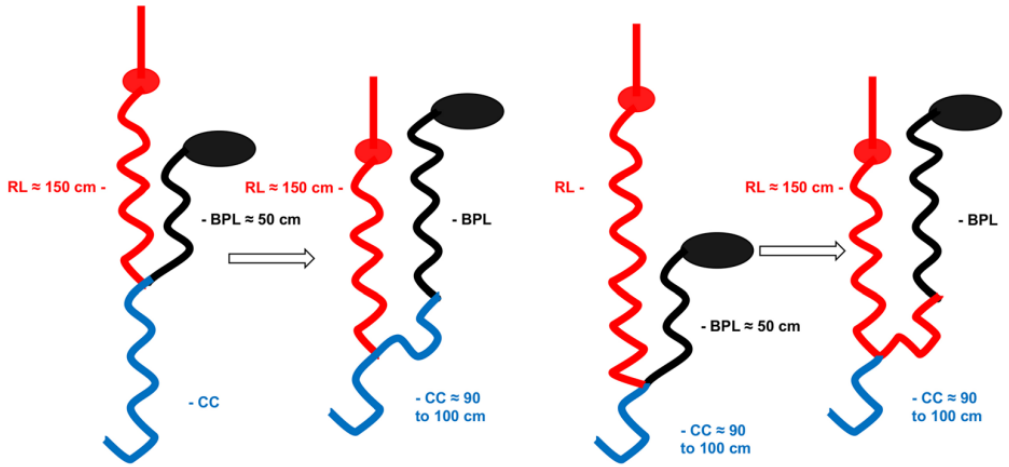


Diagram of revisional procedures with conversion either from Proximal RYGB (PRYGB) or Very very long limb (VVLL RYGB) to a long biliopancreatic limb RYGB (BPL RYGB).

Obes Surg. 2020 Mar;30(3):804-811. doi: 10.1007/s11695-019-04348-8.

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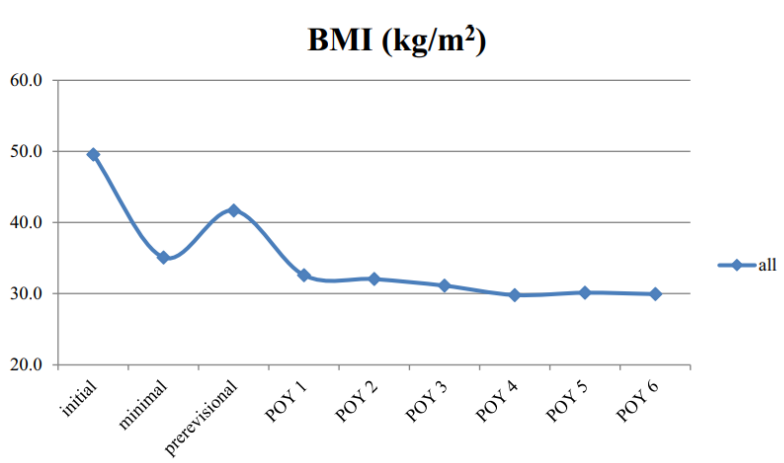

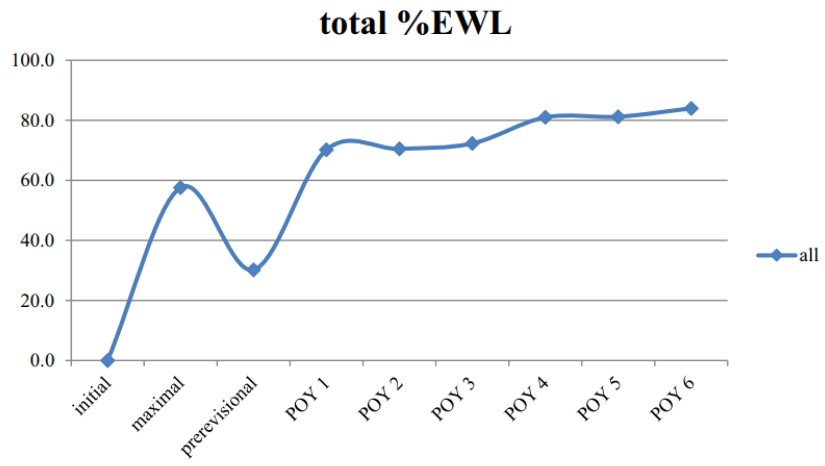

BMI and total %EWL in patients undergoing revisional surgery for failed RYGB over the study period. BMI body mass index; POY postoperative year; EWL excess weight loss

Obes Surg. 2020 Mar;30(3):804-811. doi: 10.1007/s11695-019-04348-8.

Revisional Surgery for Insufficient Loss or Regain of Weight After Roux-en-Y Gastric Bypass: Biliopancreatic Limb Length Matters

Marko Kraljević [1], Thomas Köstler [1], Julian Süsstrunk [1], Ioannis I Lazaridis [2], Amy Taheri [3], Urs Zingg [1], Tarik Delko [4]

Grade	Complication type	< 30 days	> 30 days
I	Incisional hernia	0	1
II	Pneumonia	1	0
II	Hypoalbuminemia*	0	2
II	Severe steatorrhea**	0	4
III	Surgical site infection	5	0
III	Bleeding	1	0
III	Small bowel obstruction	1	1
III	Incisional hernia	0	6
III	Internal hernia	0	1
III	Ulcer	0	2
III	Hypoalbuminemia*	0	6
III	Severe steatorrhea**	0	2
IV	Leak	0	0
V	Death	0	0

*Albumin < 30 g/L; **Required further therapy

Early and late surgery–related morbidity and mortality according to the Clavien-Dindo classification over the study period

	n (%)
Albumin < 30 g/L	8
Vitamin A	4
Vitamin B_{12}	14
Vitamin D	17
Vitamin K	2
Ferritin	3
Zinc	7
Calcium	4

Nutritional deficiencies after conversion to BPL RYGB

Conversion from RYGB to BPL RYGB leads to significant additional weight loss in the long term.

However, the morbidity is relevant, especially severe protein malnutrition and the frequency of revisional surgery

Surg Obes Relat Dis. 2018 May;14(5):554-561. doi: 10.1016/j.soard.2018.01.004. Epub 2018 Jan 31.

Conversion of standard Roux-en-Y gastric bypass to distal bypass for weight loss failure and metabolic syndrome: 3-year follow-up and evolution of technique to reduce nutritional complications

Saber Ghiassi [1], Kelvin Higa [2], Steven Chang [3], Pearl Ma [3], Aaron Lloyd [3], Keith Boone [3], Eric J DeMaria [4]

	BMI kg/m^2	Range	%EWL	%TWL	Δ BMI	FU (%)
Index RYGB	48.4 ± 9.0	35.8–79.7	–	–	–	–
At distalization	40.6 ± 7.3	24.5–64.9	33.6 ± 24.6	–	–	–
30 d postdistalization	38.1 ± 6.8	24.7–63.1	18.2 ± 8.9	6.1 ± 2.3	2.5 ± 1.0	96/96 (100)
6 mo postdistalization	34.3 ± 6.2	24.4–49.8	44.1 ± 32.8	13.8 ± 7.1	5.7 ± 3.3	73/81 (90.1)
1 yr postdistalization	34.4 ± 6.6	24.5–47.3	41.9 ± 28.3	15.3 ± 9.6	6.4 ± 4.5	42/60 (70.0)
2 yr postdistalization	33.1 ± 7.0	25.8–47.9	53.7 ± 26.3	19.4 ± 9.4	8.0 ± 4.2	18/33 (54.5)
3 yr postdistalization	32.2 ± 7.2	25.5–48.7	65.7 ± 22.0	24.2 ± 6.9	10.2 ± 3.2	10/20 (50)

BMI = body mass index; %EWL = percent excess weight loss; %TWL = %total weight loss; RYGB = Roux-en-Y gastric bypass.

Follow-up and weight loss before and after distalization **using total alimentary limb length (TALL) of 400 to 450 cm**

	BMI kg/m^2	Range	%EWL	%TWL	Δ BMI	Follow-up (%)
Index RYGB	60.4 ± 6.8	50.6–71.3	–	–	–	–
At distalization	54.6 ± 5.1	50.1–64.9	16.6 ± 12.9	–	–	–
30 d postdistalization	51.4 ± 5.3	46.7–63.1	11.0 ± 4.1	5.9 ± 2.1	3.2 ± 1.1	11/11 (100)
6 mo postdistalization	46.2 ± 3.3	39.5–49.8	27.1 ± 10.5	14.7 ± 5.9	8.1 ± 3.5	8/9 (88.9)
1 yr postdistalization	46.1 ± .9	45.0–47.3	29.0 ± 11.3	16.1 ± 7.3	9.2 ± 4.9	6/7 (85.7)
2 yr postdistalization	46.3 ± 2.2	44.7–47.9	25.0 ± 1.3	13.3 ± 1.5	7.1 ± 1.2	2/4 (50)
3 yr postdistalization	44.5 ± 6.0	40.3–48.7	32.0 ± 12.7	16.8 ± 5.8	8.9 ± 2.5	2/4 (50)

BMI = body mass index; %EWL = percent excess weight loss; %TWL = %total weight loss; RYGB = Roux-en-Y gastric bypass.

Outcomes in the subgroup of 11 patients who were **super-obese before distalization using total alimentary limb length (TALL) of 400 to 450 cm**

Surg Obes Relat Dis. 2018 May;14(5):554-561. doi: 10.1016/j.soard.2018.01.004. Epub 2018 Jan 31.

Conversion of standard Roux-en-Y gastric bypass to distal bypass for weight loss failure and metabolic syndrome: 3-year follow-up and evolution of technique to reduce nutritional complications

Saber Ghiassi [1], Kelvin Higa [2], Steven Chang [3], Pearl Ma [3], Aaron Lloyd [3], Keith Boone [3], Eric J DeMaria [4]

	Predistalization rate	6 mo resolution	1 yr resolution	2 yr resolution	3 yr resolution
Sleep apnea	11/96 (11.46%)	4/7 (57.14%)	2/4 (50.00%)	1/1 (100.00%)	1/1 (100.00%)
GERD	22/96 (22.92%)	10/15 (66.67%)	8/12 (66.67%)	2/5 (40.00%)	2/5 (40.00%)
Hyperlipidemia	17/96 (17.71%)	4/12 (33.33%)	4/10 (40.00%)	1/3 (33.33%)	1/3 (33.33%)
Hypertension	55/96 (57.29%)	6/36 (16.67%)	6/21 (28.57%)	1/9 (11.11%)	0/8 (.00%)
Diabetes	28/96 (29.17%)	11/21 (52.38%)	6/9 (66.67%)	4/5 (80.00%)	3/3 (100.00%)

GERD = gastroesophageal reflux disease.

Resolution of co-morbid conditions after distalization using total alimentary limb length (TALL) of 400 to 450 cm

	HbA1C (n)	Serum glucose (n)
Predistalization	7.0	141.3 mg/dL
6 mo postdistalization	5.8 (10)	116.8 mg/dL (10)
1 yr postdistalization	6.0 (8)	105.43 mg/dL (7)
2 yr postdistalization	6.8 (6)	105.3 mg/dL (9)
3 yr postdistalization	5.07 (3)	123.8 mg/dL (5)

Mean glycosylated hemoglobin (HbA1C) and serum glucose before and after distalization using total alimentary limb length (TALL) of 400 to 450 cm

› Surg Obes Relat Dis. 2018 May;14(5):554-561. doi: 10.1016/j.soard.2018.01.004. Epub 2018 Jan 31.

Conversion of standard Roux-en-Y gastric bypass to distal bypass for weight loss failure and metabolic syndrome: 3-year follow-up and evolution of technique to reduce nutritional complications

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Conclusion:

Revision of RYGB to distal bypass in a select subset of patients with recurrent morbid obesity and self-reported hunger/food cravings resulted in substantial weight loss and resolution of obesity-related co-morbidities.

The potential for protein calorie malnutrition and diarrhea is high in patients with a TALL of 300 cm.

Creation of a TALL of 400 to 450 cm seems to be reasonable and offer good weight loss, improvement in co-morbidities, and pronounced metabolic effects without causing significant malnutrition.

Obes Surg. 2019 Mar;29(3):811-818. doi: 10.1007/s11695-018-03635-0.

Revision of Roux-en-Y Gastric Bypass with Limb Distalization for Inadequate Weight Loss or Weight Regain

Reuben D Shin [1,2], Michael B Goldberg [1,3], Allison S Shafran [1], Samuel A Shikora [1], Melissa C Majumdar [1], Scott A Shikora [4]

Weight outcomes

	Before RNYGB	Before Distalization	6 months (from distalization)	12 year (from distalization)	24 months (from distalization)	Mean follow-up of 18.3 months
	$n = 22$	$n = 22$	$n = 20$	$n = 19$	$n = 6$	$n = 18$[a]
Weight (lbs)	333.6 (±50.1)	267.5 (±35.7)	227 (±39.9)	211.2 (±38.4)	206.17 (±31)	191.58 (±38.2)
Weight change (lbs) [total from original]	-- [--]	-- [66.0 (±44.1)]	41.1 (±20) [101.5 (±48.1)]	58.4 (26.3) [118.7 (±54.4)]	67.3 (±36.6) [148.3 (±53.3)]	71.6 (±41.3) [133.6 (±55.0)]
BMI (kg/m^2)	54.1 (±8.5)	43.0 (±5.5)	33 (±12.3)	34.5 (6.5)	34.13 (±2.7)	31 (±5.5)
BMI change (kg/m^2) [total from original]	-- [--]	-- [11.0 (±7.5)]	6.6 (±3.3) [16.7 (±7.6)]	9.2 (±4.5) [19.8 (±9.1)]	11.57 (±7.0) [26.1 (±8.7)]	11.8 (±7.4) [22.2 (±9.9)]
%EWL [total from original]	-- [--]	-- [35.0% (±19.6)]	40.2% (±20.7) [58.5% (±20.5)]	55.5% (±29.4) [67.0% (±20.7)]	51.85% (±21.6) [71.1% (±12.5)]	62.3% (±32.4) [77.8% (±23.6)]
%TWL [total from original]	-- [--]	-- [18.9% (±11.2)]	15.5% (±7.1) [30.2% (±11.7)]	21.9% (±9.5) [35.1% (±12.3)]	24.1% (±12.2) [40.9% (±11.3)]	25.4% (±14.4) [40.2% (±13.3)]

RYGB Roux-en-Y gastric bypass, *BMI* Body Mass Index, *EWL* excess weight loss, *TWL* total weight loss

[a] Excludes reversals and death

Comorbidity outcomes

	Pre-distalization	Post-distalization remission
Hypertension	6/22 (27%)	1/6 (17%)
Diabetes	4/22 (18%)	4/4 (100%)
GERD	8/22 (36%)	3/8 (38%)
Obstructive sleep apnea	5/22 (23%)	NA

GERD gastroesophageal reflux disease; *NA* not available

Surg Obes Relat Dis. 2016 Nov;12(9):1671-1678. doi: 10.1016/j.soard.2016.02.015. Epub 2016 Feb 23.

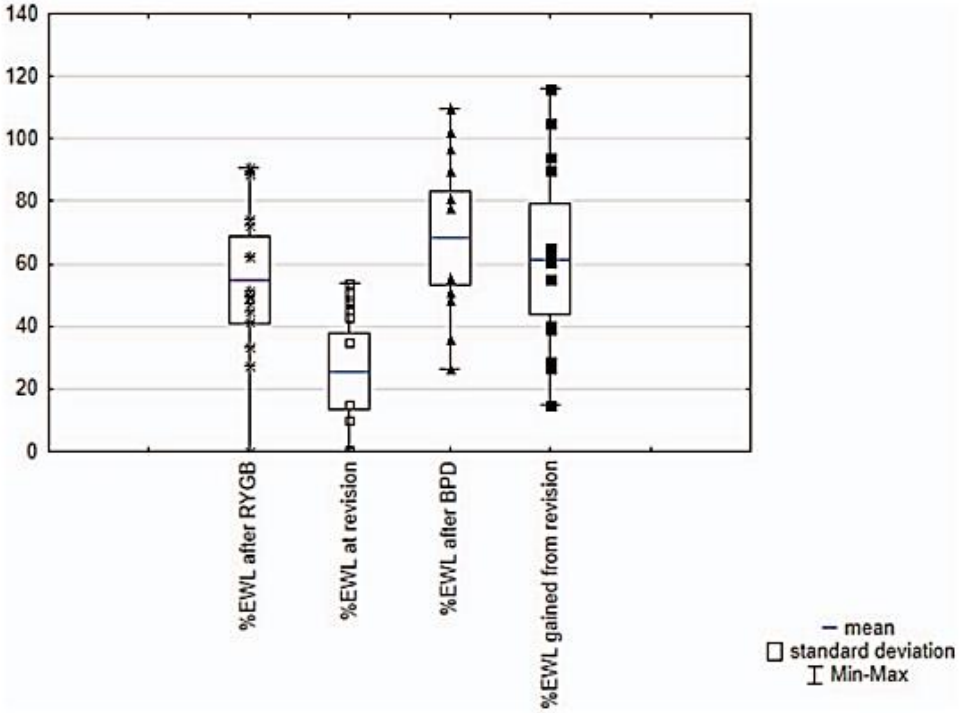
One-stage conversion of Roux-en-Y gastric bypass to a modified biliopancreatic diversion with duodenal switch using a hybrid sleeve concept

Philippe Topart [1], Guillaume Becouarn [2]

The gastrojejunal anastomosis of the RYGB was untouched and the gastric fundus was resected.

The gastric continuity was restored by an anastomosis between a short segment of the alimentary limb and the gastric antrum.

A standard BPD/DS was then performed without restoration of the jejunal continuity.



Evolution of the percentage of excess weight loss (%EWL)

Asian J Endosc Surg. 2016 May;9(2):122-7. doi: 10.1111/ases.12277. Epub 2016 Mar 4.

Laparoscopic revision of Roux-en-Y gastric bypass to sleeve gastrectomy: A ray of hope for failed Roux-en-Y gastric bypass

Muffazal Lakdawala [1 2], Peter Limas [1 3], Shilpa Dhar [1], Carlyne Remedios [1], Neha Dhulla [1], Amit Sood [1 2], Aparna Govil Bhasker [1 2]

Mean age: 38.8 ± 9.1 years.

Mean BMI at primary surgery: 57.9 ± 8.1 kg/m2

Mean weight loss at 2 years: 36.8 ± 8.6 kg (excess weight loss = 39.8 ± 14.9%).

Mean duration between primary and revision surgery was 6.2 ± 1.1 years.

RYGB to SG – one stage procedure.

Mean duration of revision surgery: 120.0 ± 15.5 min. Mean blood loss: 70 ± 50 mL.

One year after revision surgery - mean weight: 21.5 ± 10.5 kg was achieved (mean excess weight loss = 35.8 ± 8.8%).

Two patients with type 2 diabetes mellitus and the one with hypertension achieved remission.

Dumping resolved

There were no complications.

(Muffazal Lakdawala, et al. 2016)

› Surg Obes Relat Dis. 2016 Nov;12(9):1671-1678. doi: 10.1016/j.soard.2016.02.015.
Epub 2016 Feb 23.

One-stage conversion of Roux-en-Y gastric bypass to a modified biliopancreatic diversion with duodenal switch using a hybrid sleeve concept

Philippe Topart [1], Guillaume Becouarn [2]

N = 14
Mean body mass index (BMI) - 44.3 6.0 kg/m2
Mean %EWL - 33.4%
Percentage of total weight loss (%TWL) of 15.3 11.7% before conversion.

The BMI before RYGB was 54.4 13.1 kg/m2 ,with half of the patients being super-obese.

The 30-day complication rate was 28.5%.

No patient was lost to follow-up over a mean 25.8 months and the BMI of the 12 patients with a follow-up ≥3 months is 33.2 ±7 .2 kg/m2 .

With reference to the initial weight of the patients, the mean %EWL is 73.5% and %TWL is 37.6 16.0%.

On average, patients benefited from a **21.1% TWL** through the conversion of their RYGB

This procedure allows for an easier conversion of RYGB to BPD/DS and appears to be the most effective procedure for resuming weight loss.

Nutritional consequences and weight loss are similar to the primary BPD/DS results. However, the benefits and risks must be carefully assessed according to the definition of weight loss failure.

Surg Obes Relat Dis. 2016 Nov;12(9):1663-1670. doi: 10.1016/j.soard.2016.03.021.
Epub 2016 Mar 23.

Mid-term outcomes of gastric bypass weight loss failure to duodenal switch

Amit Surve [1], Hinali Zaveri [1], Daniel Cottam [2], LeGrand Belnap [1], Walter Medlin [1], Austin Cottam [1]

Weight loss outcomes at 3, 6, 9, 12, 18, and 24 months post–revision DS (RYDS and SADS)

	Value					
Mo. after revision DS	3	6	9	12	18	24
Patients (n), (%)	25/28, (89.2%)	23/27, (85.1%)	20/24, (83.3%)	18/22, (81.8%)	14/19, (73.6%)	11/15, (73.3%)
%EWL*	31.2 (26, 36.5)	45.1 (40.8, 49.5)	51 (47.4, 54.7)	54.2 (50.3, 57.9)	56 (51.3, 60.7)	56.4 (51.3, 61.5)
%TWL*	15.2 (12.6, 17.7)	22.2 (19.9, 24.5)	25.8 (23.9, 27.6)	27.7 (25.8, 29.5)	28.9 (26.5,31.2)	29.2 (26.6, 31.8)
Change in BMI* (kg/m^2)	7.1 (5.6, 8.6)	10.5 (9.1, 11.9)	12.3 (11.2, 13.4)	13.3 (12.2, 14.4)	14 (12.6, 15.4)	14.2 (12.6, 15.8)
BMI * (Kg/m^2)	42 (40.2, 43.9)	40.1 (38.4, 41.8)	38.3 (36.5, 40)	36.3 (34.3, 38.4)	33 (30.4, 35.9)	29.9 (26.5, 33.4)
%EBMIL*	41 (33.3, 48.6)	58.3 (51.9, 64.8)	66.3 (61, 71.5)	70.2 (64.6,75.7)	72.4 (65.6, 79.2)	72.9 (65.5, 80.2)

BMI = body mass index; DS = duodenal switch; %EBMIL = percent excess BMI lost; %EWL = percent excess weight loss; RYDS = Roux-en-Y reconstruction duodenal switch; SADS = single-anastomosis duodenal switch; %TWL = percent total weight loss

*Values are expressed as means (95% CI).

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Amit Surve [1], Hinali Zaveri [1], Daniel Cottam [2], LeGrand Belnap [1], Walter Medlin [1], Austin Cottam [1]

	Albumin	Calcium	Vitamin B1	Vitamin B12	Vitamin A	Vitamin D
Pre–revision DS						
Value*	3.9 ± .4	9.3 ± .5	128.3 ± 54.4	405.8 ± 285	40.5 ± 14.8	23.9 ± 13.5
Range	3–4.5	8.4–10.5	32.6–251.4	148–1589	30–51	5.3–60
Abnormal Labs (n)	3/32	1/32	3/32	3/32	1/32	14/32
≥6 mo (n: 17/27)						
Value*	3.8 ± .8	9 ± .6	146.4 ± 49.7	716.4 ± 721.5	39.3 ± 15.4	45.7 ± 27.7
Range	2–4.3	7.8–9.9	81.3–208.4	281–2000	25–57	18.9–96
Abnormal Labs (n)	2/17	1/17	0/17	0/17	0/17	3/17
≥12 mo (n: 14/22)						
Value*	3.6 ± .9	8.9 ± .8	100.9 ± 34.6	742.5 ± 425	36 ± 12.9	45.1 ± 27.7
Range	1.7–4.6	7.8–10.3	50–147.2	384–1459	24–57	11–96
Abnormal Labs (n)	3/22	5/22	1/22	2/22	0/22	2/22
Normal Range	3.5–5.5 g/dL	8.5–10.2 mg/dL	74–222 nmol/L	200–1100 pg/mL	24–90 ug/dL	25–80 ng/mL

DS = duodenal switch.
*Values are expressed as mean ± standard deviation.

Nutritional outcomes in patients post revision DS

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Epub 2016 Mar 23.

Mid-term outcomes of gastric bypass weight loss failure to duodenal switch

Amit Surve [1], Hinali Zaveri [1], Daniel Cottam [2], LeGrand Belnap [1], Walter Medlin [1], Austin Cottam [1]

Short-term			**Long-term**		
Complications	RYDS (n = 4/9, 44.4%)	SADS (n = 4/23, 17.3%)	Complications	RYDS (n = 2/9, 22.2%)	SADS (n = 3/23, 13%)
Abdominal abscess: 2*	1	1	Gastric ulcer: 1†	0	1
Peritonitis: 3‡	2	1	Internal hernia: 1§	0	1
Acute blood loss anemia: 1	1	0	Stricture: 1¶	1	0
Gastric leak: 1‖	0	1	Small bowel obstruction: 1 T/B	0	1
Gastric outlet obstruction: 1**	0	1	Sepsis: 1	1	0

A laparoscopic revision from RYGB to DS is an effective weight-loss operation with midterm follow-up of 2 years. However, complication rate is significant compared with primary procedures

Surg Endosc. 2020 Oct;34(10):4422-4428. doi: 10.1007/s00464-019-07219-6. Epub 2019 Oct 21.

Conversions of Roux-en-Y gastric bypass to duodenal switch (SADI-S and BPD-DS) for weight regain

Rena C Moon [1], Layth Alkhairi [1], Alyssa Jameson Wier [1], Andre F Teixeira [1], Muhammad A Jawad [2]

Test	Reference range	Preop ($n=15$)	6 months ($n=7$)	1 year ($n=4$)	2 year ($n=2$)	Abnormal		
						Preop	1 year	2 year
Hemoglobin (g/L)	Male 132.0–171.0 Female 117.0–155.0	128.3 (16.8)	116.6 (14.4)	107.3 (8.7)	106.0 (1.4)	25%	75%	100%
Protein (g/L)	61.0–81.0	69.9 (4.9)	64.3 (8.5)	65.8 (4.6)	70.0 (2.8)	None	25%	None
Albumin (g/L)	36.0–51.0	40.4 (2.7)	39.6 (15.4)	37.0 (1.6)	38.5 (2.1)	14%	25%	None
Calcium (mmol/L)	2.15–2.55	2.31 (0.08)	2.01 (0.46)	2.21 (0.14)	2.19 (0.02)	13%	50%	None
AST (ukat/L)	0.17–0.60	0.33 (0.07)	0.49 (0.23)	0.42 (0.09)	0.41 (0.10)	None	None	None
ALT (ukat/L)	0.10–0.68	0.34 (0.16)	0.53 (0.34)	0.38 (0.16)	0.28 (0.11)	None	None	None

AST aspartate aminotransferase, *ALT* alanine aminotransferase

Test	Reference range	6 months ($n=7$)	1 year ($n=4$)	2 year ($n=2$)	Abnormal		
					6 months	1 year	2 year
Vitamin A (umol/L)	0.7–2.3	1.2 (0.4)	0.9 (0.4)	1.0 (0.3)	None	25%	None
Vitamin D, 25-hydroxy (nmol/L)	74.9–249.6	78.5 (44.2)	65.0 (21.5)	43.7 (22.9)	33%	75%	100%
Vitamin E, alpha tocopherol (umol/L)	1.2–3.9	1.9 (0.5)	1.6 (0.1)	1.5 (0.1)	17%	None	None
Vitamin B_{12} (pmol/L)	155.7–698.1	894.4 (517.1)	547.0 (253.7)	412.2 (238.5)	57%	25%	None
PTH, intact (ng/L)	15–65	52.4 (17.0)	51.0 (14.4)	80 (16.0)	20%	33%	50%
Ferritin, serum (pmol/L)	33.7–337.1	74.2 (44.8)	29.2 (12.6)	10.1 (4.7)	14%	50%	100%

PTH parathyroid hormone

- **Hemoglobin dropped** postoperatively and was below normal level for most patients.
- Several patients showed **low levels of vitamin D and Ferritin** during the follow-up.
- Few patients also reported **elevated parathyroid hormone**.

Conversions of RYGB to SADI-S and BPD-DS can provide significant additional weight loss. Malnutrition can develop after the conversion, and further research is needed for evaluating safety

REVERSAL OF RYGB AND REVISION TO SINGLE ANASTOMOSIS DUODENAL ILEAL BYPASS WITH SLEEVE GASTRECTOMY (SADI-S) USING A TWO STAGE APPROACH. SAFETY, AND 30 DAY OUTCOMES FOR PATIENTS WITH FAILED RYGB.

Ryan Fairley, DO[1], Moataz Bashah, MD[2], Danial Cottam, MD[3], Helmuth T Billy[1]. [1]Community Memorial Hospital, Ventura California, [2]Hamad Medical Center, Doha Qatar, [3]Bariatric Medical Institute, Salt Lake City, Utah

- 10 morbidly obese patients underwent revision following weight regain after RYGB.
- Average **pre-operative BMI was 44.3** with a range of 37.6 to 54.1.
- Presenting **weight ranged from 210.5 pounds to 362.4 pounds**.
- Each patient underwent laparoscopic reversal of their gastric bypass to normal anatomy.
- The average time from primary RYGB to **reversal of gastric bypass was 8 years**.
- Average length of stay was 2.5 days.
- Time between reversal of RYGB to laparoscopic SADI-S ranged from 3 to 6 months.
- **Preoperative weight at the time of SADI-S ranged from 215.5 pounds to 353.8 pounds**.
- **30 day post operative weight ranged from 196.6 to 316.6 pounds** and the **average weight lost per patient** in the first 30 days was **19.85 pounds**.
- In the 30 days following SADI-S, 2 patients were seen in the emergency department for reflux, both treated with proton pump inhibitors not requiring admission.
- There were no reoperations, there were no deaths and there were no readmissions

Conclusions:

A two stage approach to revise failed RYGB to SADI-S appears to be a promising and safe approach to the challenge of weight regain following RYGB.

Further long term follow up and a larger series will be needed to demonstrate safety and efficacy.

› Surg Endosc. 2020 Oct;34(10):4422-4428. doi: 10.1007/s00464-019-07219-6. Epub 2019 Oct 21.

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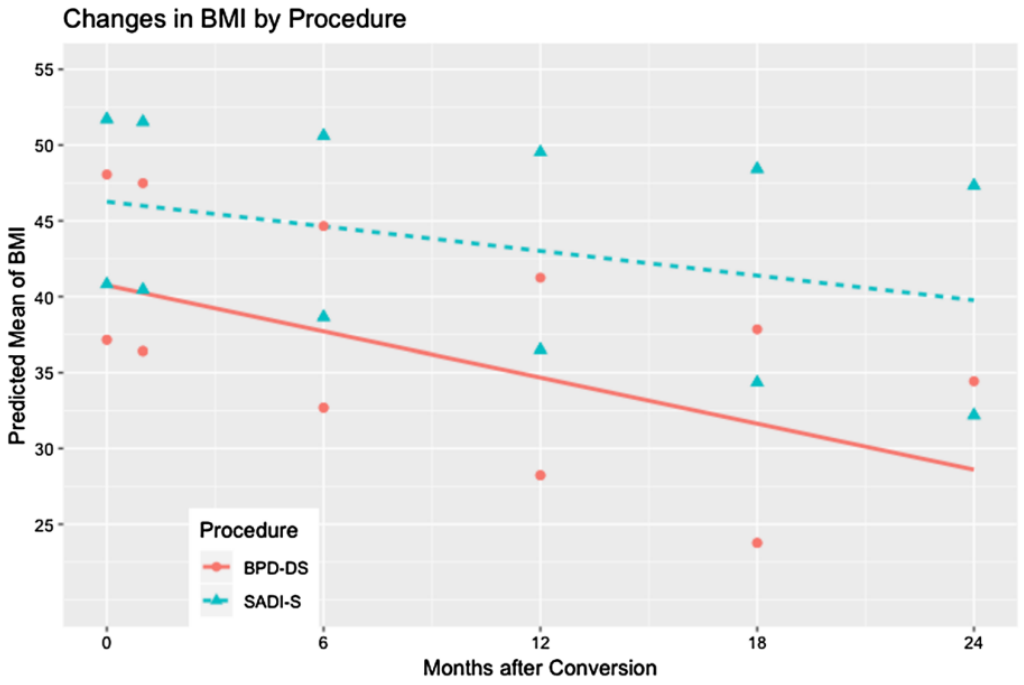
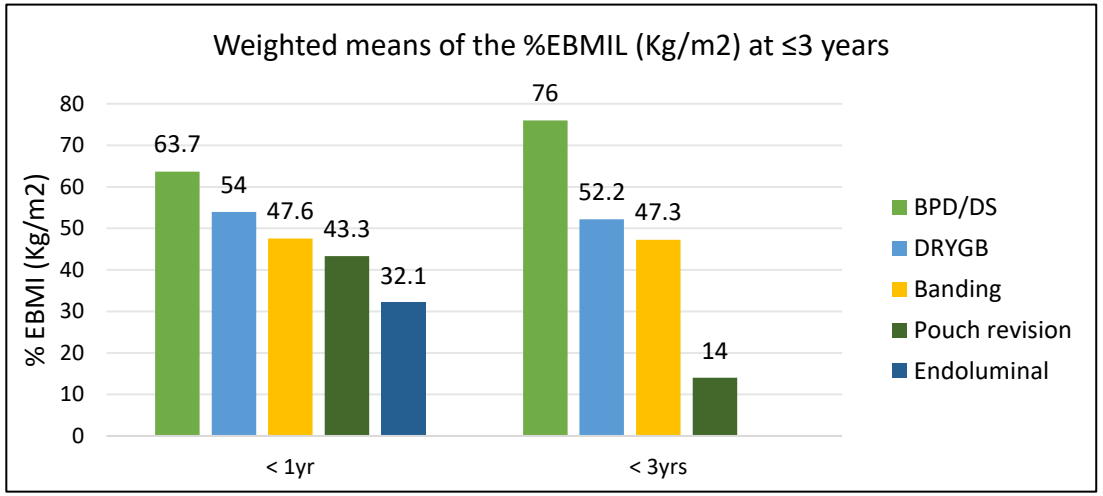
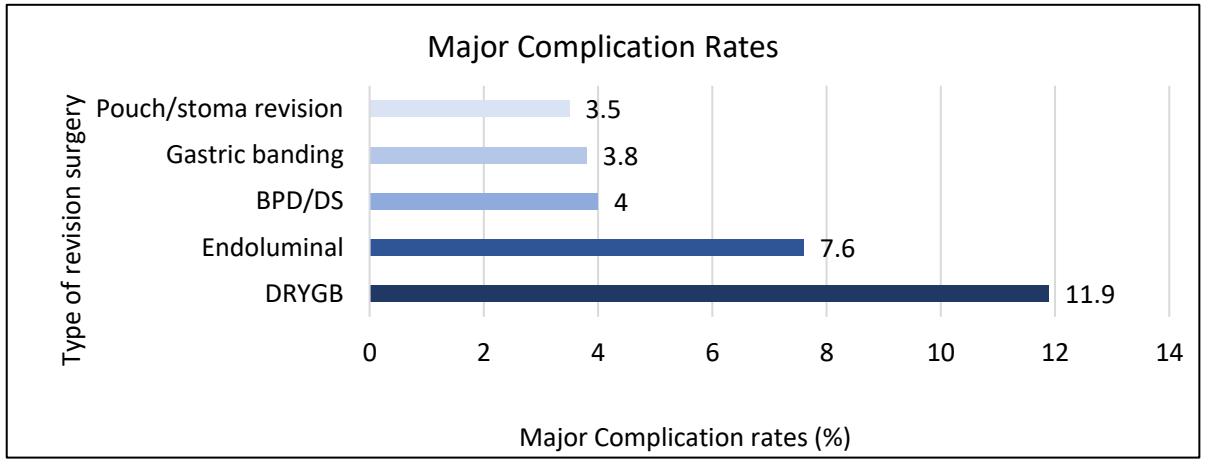


Predictive changes in body mass index (BMI) by the procedure. BMI body mass index, BPD-DS Biliopancreatic diversion with duodenal switch, SADI-S Single anastomosis duodeno-ileal bypass with sleeve





(Tran, D.D., et al. 2016)

Conclusion

- Obesity is a chronic disease
- Recurrent Weight gain remains a problem with RYGB with standard BP Limb lengths.
- Reasons for weight regain are multifactorial.
- MDT Approach
- New GLP I Drugs is first line of therapy
- Endoscopy is next best option
- Type 1 Distalisation with a TALL of 400 cms or Conversion to SADI-S / DS is best surgical option

We Never say Goodbye in India
We say Until We Meet Again