” Transit Bipartition and Intestinal By-pass: Physiopathology and Surgical Principles”

- Antonio J. Torres MD, PhD, FACS, FASMBS
- Professor of Surgery
- Hospital Clínico San Carlos. Universidad Complutense de Madrid
- **President IFSO 2011-2012**
- **Chairman IFSO´s Board of Trustees 2015-2019**

Disclosures

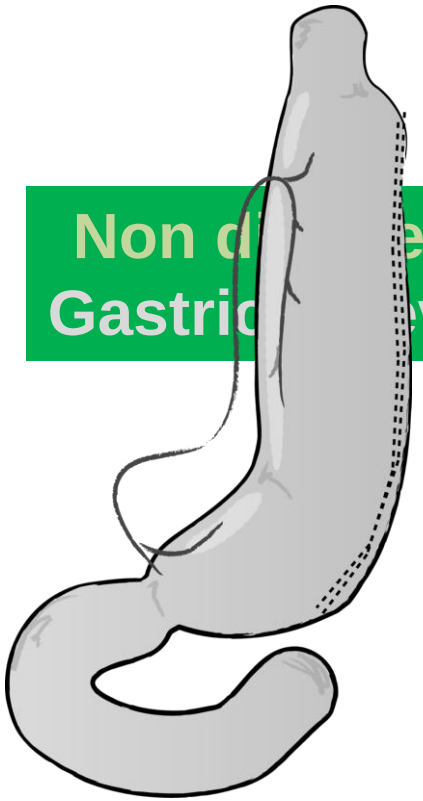
Lectures & Consultant for

- Johnson & Johnson
- Medtronic
- GT Metabolic
- Meril
- Gore Medical

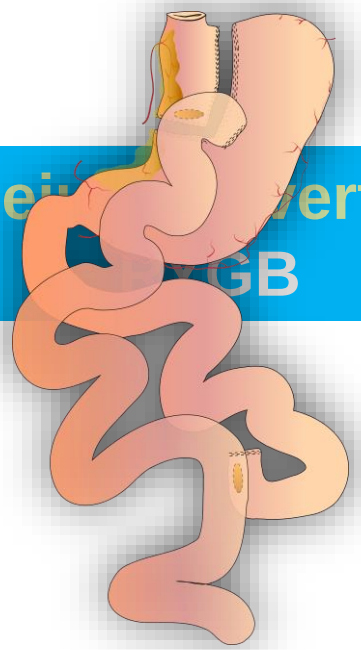
Bariatric/Metabolic Surgery:

Surgical Alternatives

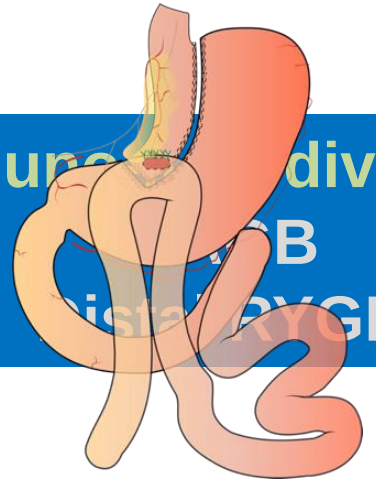
Non d ed
Gastric eve

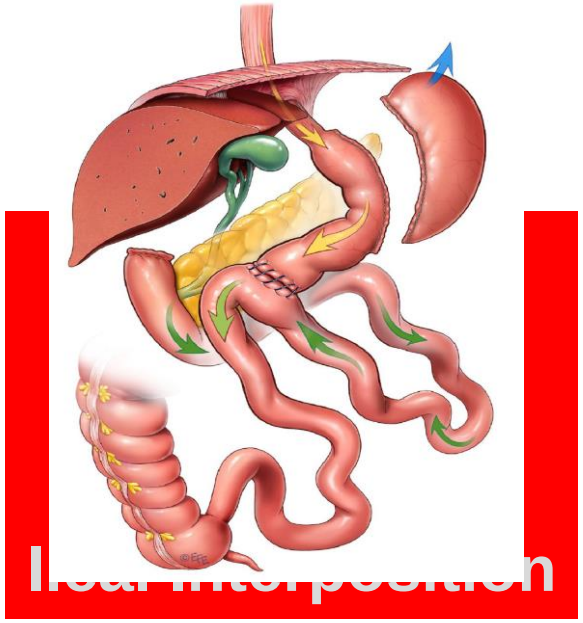


Jej verted
GB



Jejun diverted
B
RYGB





Bariatric/Metabolic Surgery:

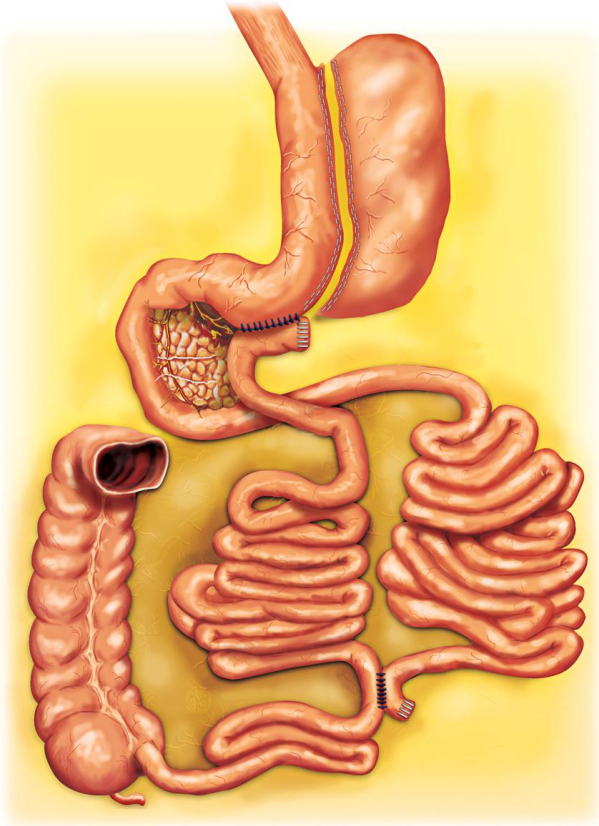
Surgical Approaches

- PYLORUS PRESERVATION
- ILEAL INTERPOSITION

MORE PHYSIOLOGICAL SURGERY

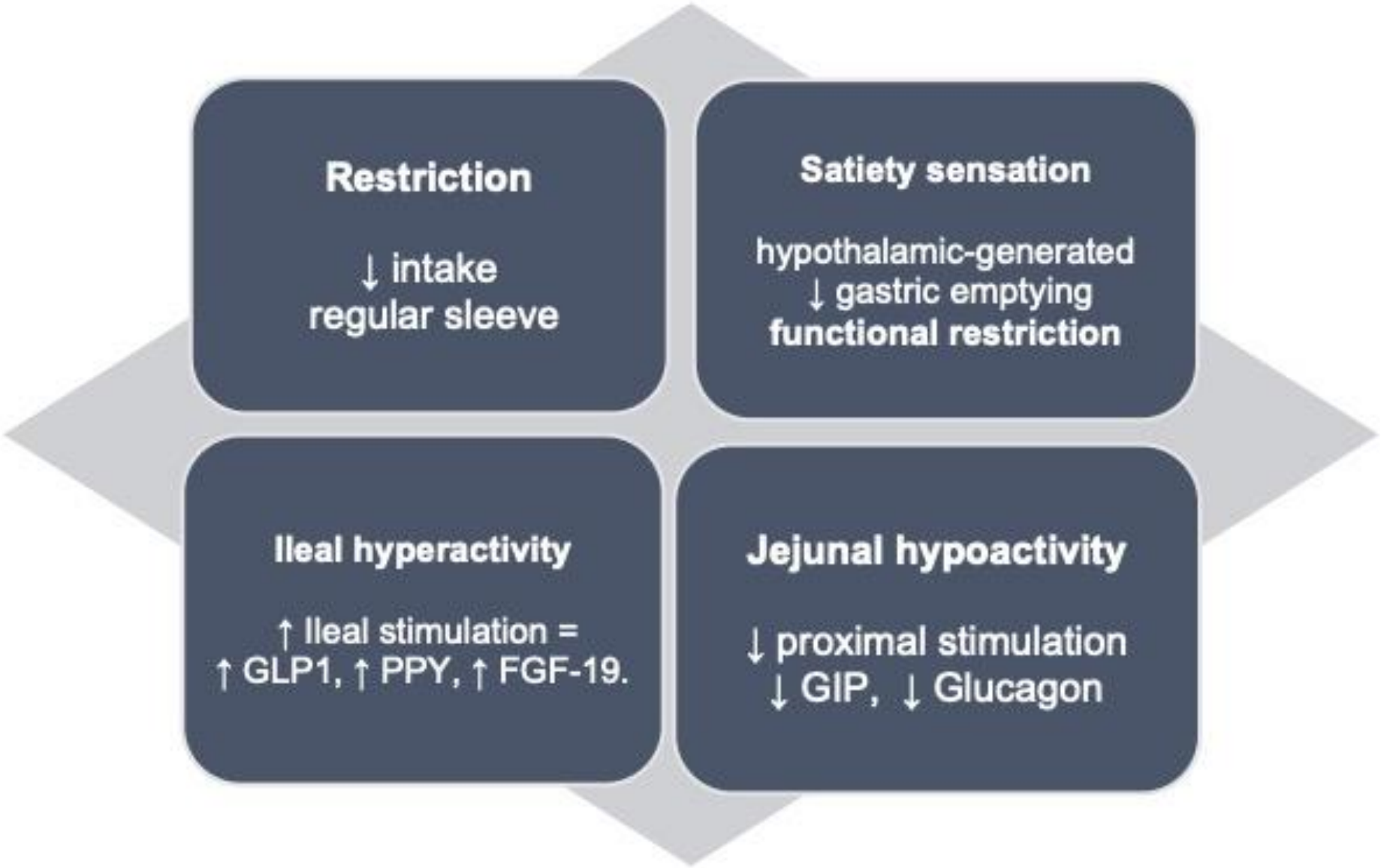
Sleeve Gastrectomy With Transit Bipartition

A Potent Intervention for Metabolic Syndrome and Obesity



1020 cases

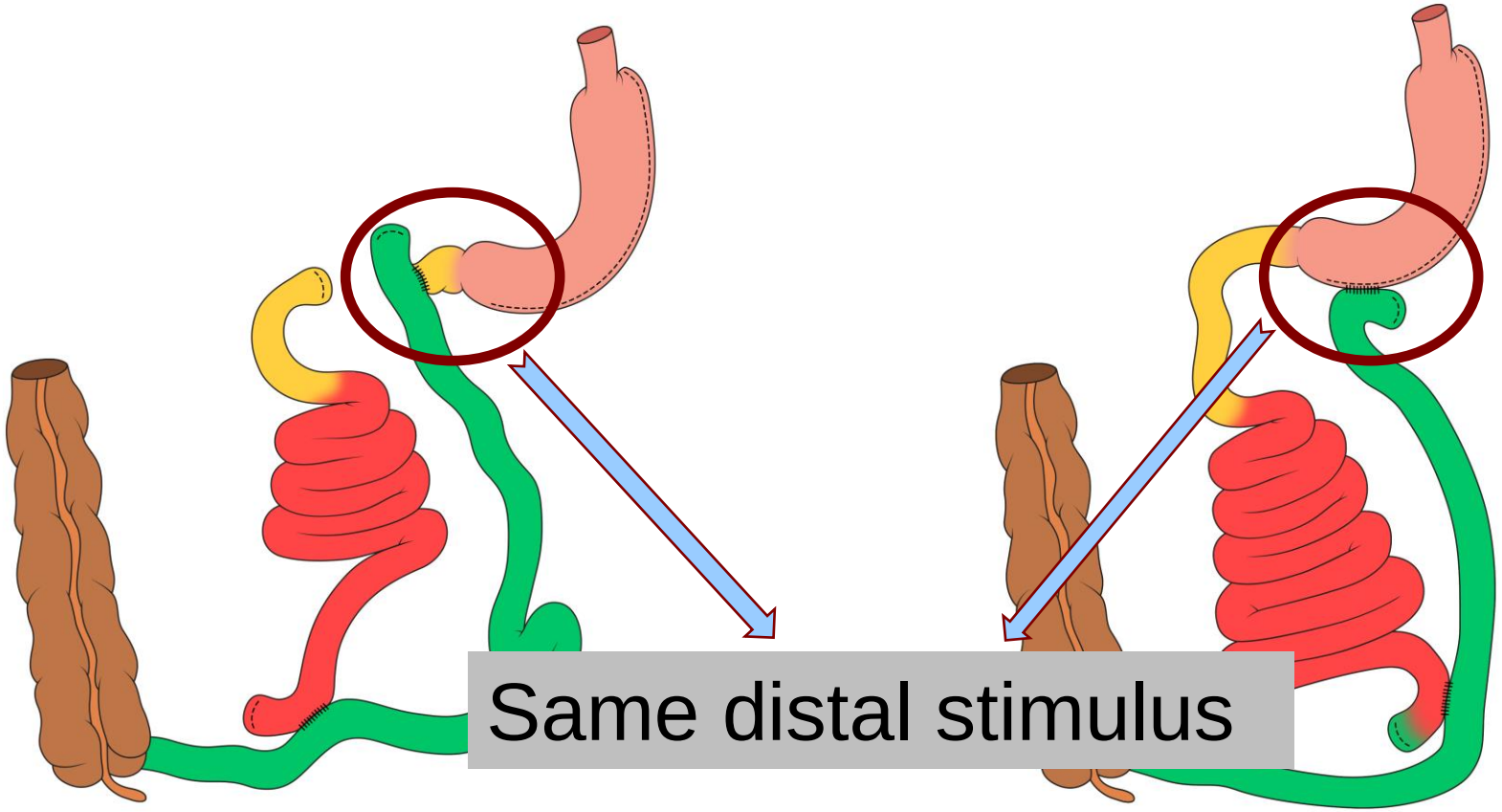
SG+TB wa
restrictior
and the c
functions



bipartition.

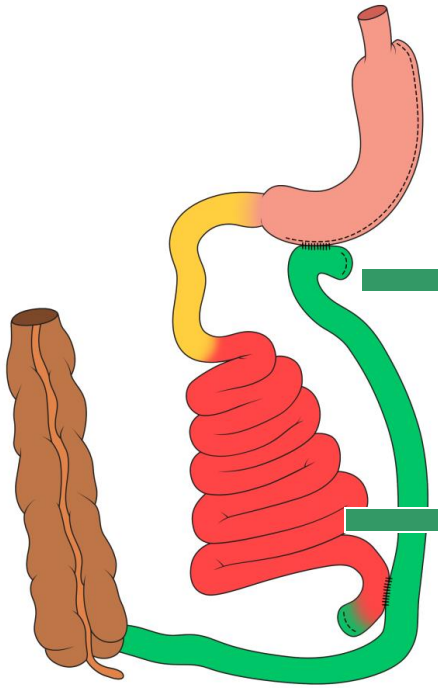
Duodenal Switch

Transit Bipartition



Same distal stimulus

This is a **transit bipartition**



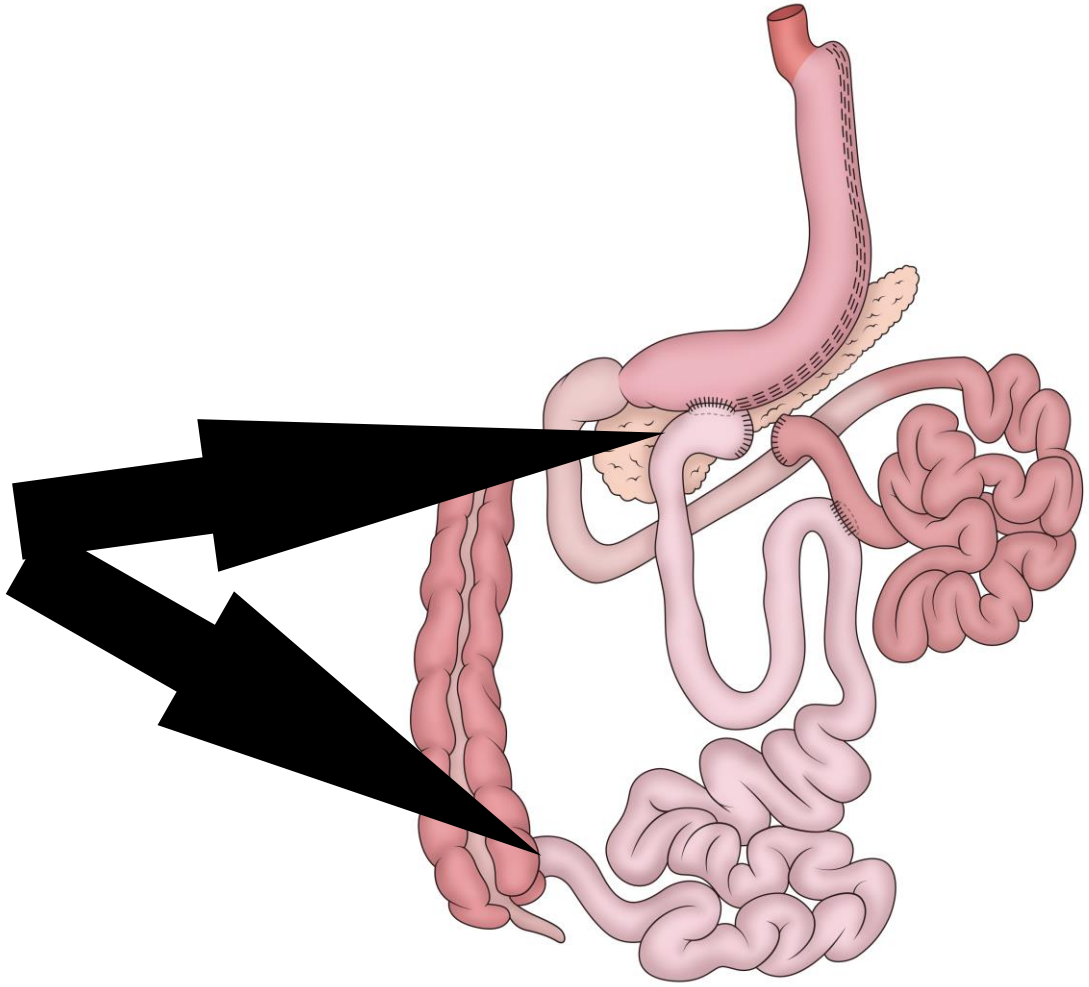
Easier and safer anastomosis

Partial Proximal deactivaton
NO excluded segment
TOTAL endoscopic access
MINIMAL Nutritional problems

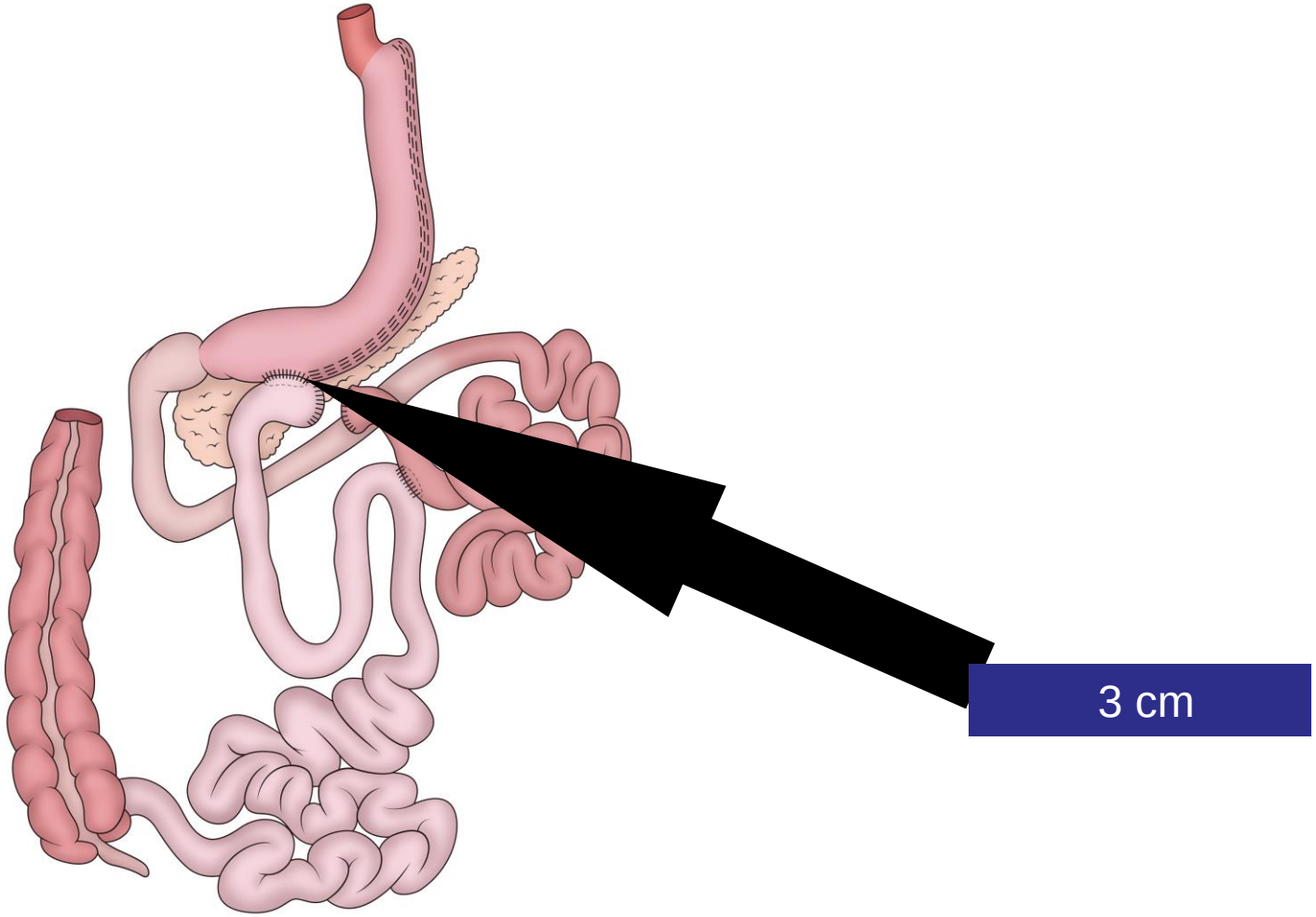
Santoro et al.
Obes Surg 2006; 16:1371-79
Obes Surg 2008; 18:1343–1345
Ann Surg. 2012 Jul;256(1):104-10.

Bipartition

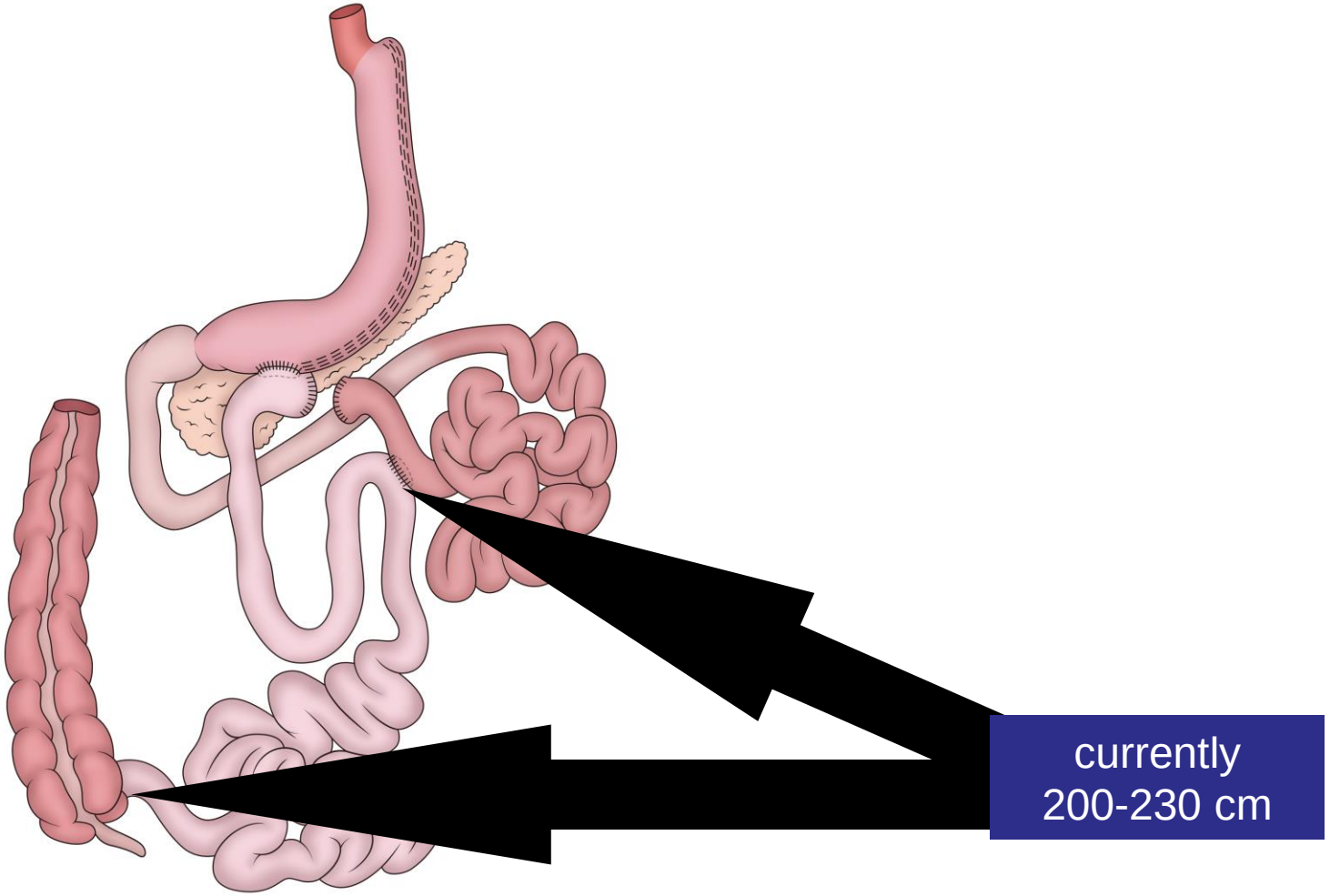
Gastro-ileoanastomosis
260 cm
from the cecum



The 3 cm gastroileal anastomosis



The "common channel"



SG with Transit Bipartition

Very similar to DS results

ers

years

years

Pre-op average BMI=41Kg/m²

Type 2 Diabetes

(whole group analysis in real time)

Remission (HbA1c <6%)	**87.3%**
Improvement	**12.2%**
Unaltered	**0.5%**

Without a complete duodenal exclusion

Just a duodenal steal and ileal shift

Arterial Hypertension

(whole group analysis in real time)

Remission	85.0%
Improvement	14.1%
Unaltered	0.9%

High Triglycerides

(whole group analysis in real time)

Remission	90.7%
Improvement	8.9%
Unaltered	0.4%

ELSEVIER

SURGERY FOR OBESITY
AND RELATED DISEASES

Is transit
with duode

Philippe

Conclusion

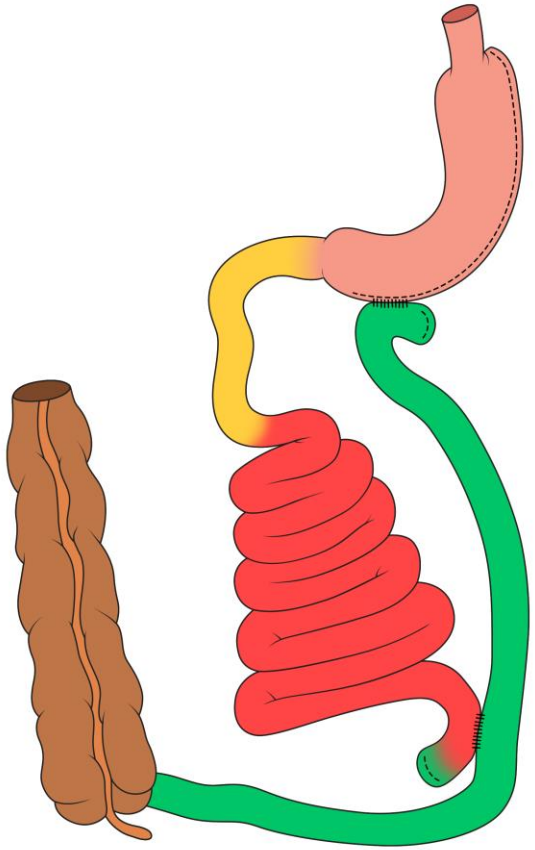
While TB does not achieve the same weight loss outcomes as the BPD-DS in superobese patients, there is a clear benefit in side effects. In addition to a shorter operative time and a less complex procedure, major postoperative complications were much less frequent after TB. TB represents a much simpler alternative to BPD-DS for treating superobesity, but prospective studies and longer follow-up are required to confirm the maintenance of the weight loss in the long term.

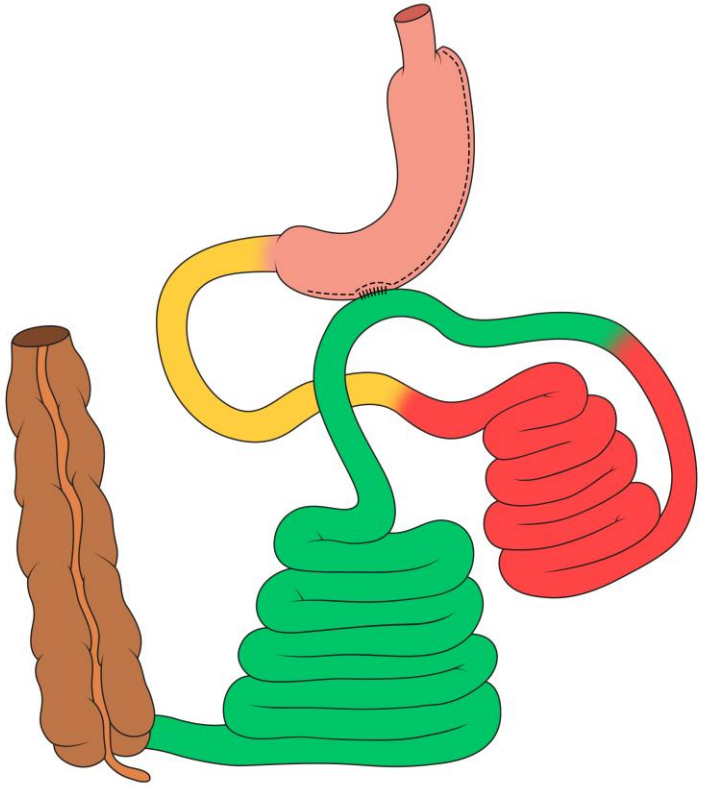
Table 1
Biliopancre
patient cha

No. of pati
Initial weig
Initial BMI
Preoperativ
Age, yr
Women/me
HT
T2D
OSA

BPD-DS
bipartition;
pertension; T2

Transit bipartition in 1 or 2 anastomoses





Sleeve gastrectomy with transit bipartition: SG +TB

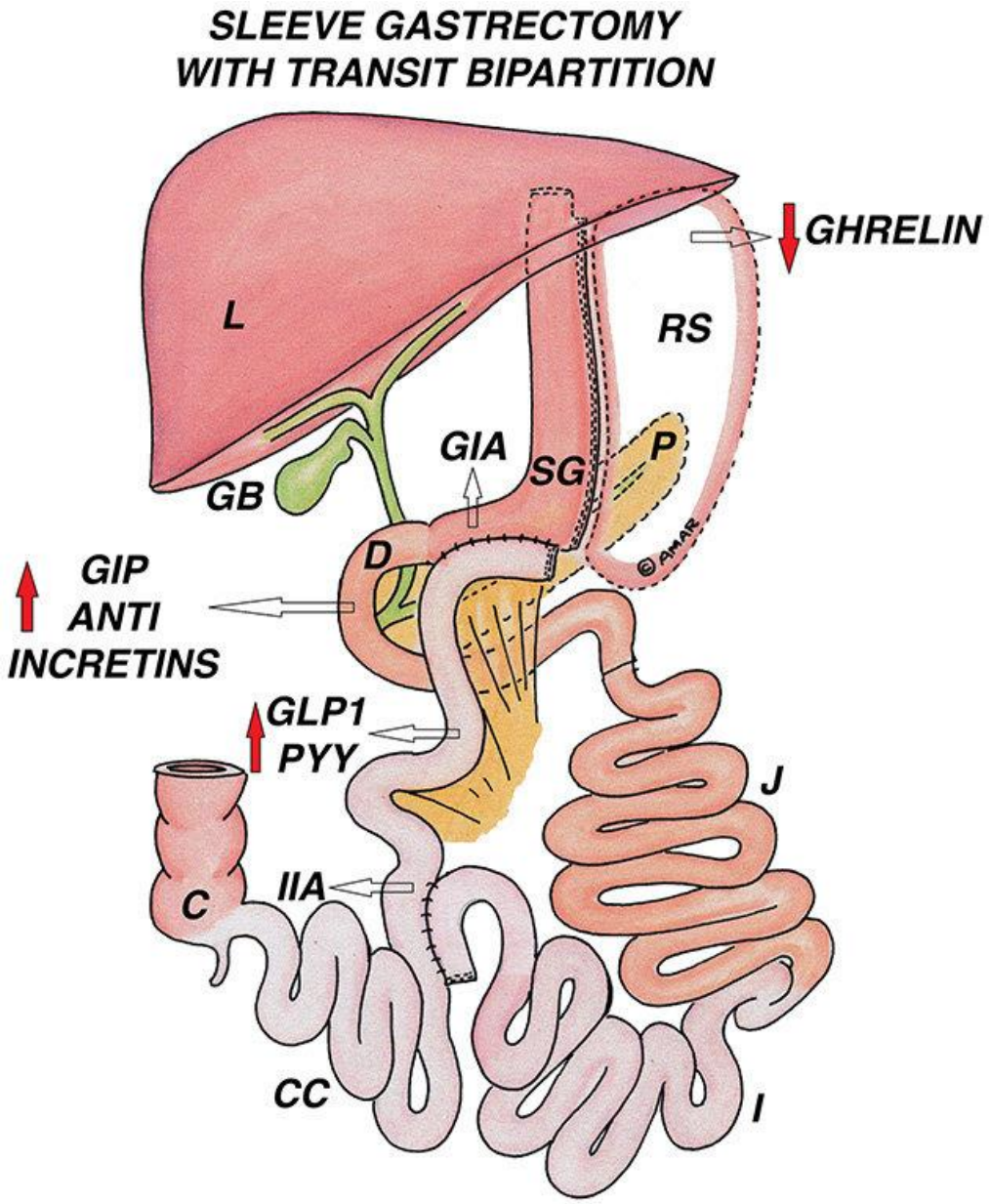


Image source: Ugale et al. 2017 Ann laparosc Endosc Surg

Single Anastomosis Sleeve Ileal: SASI

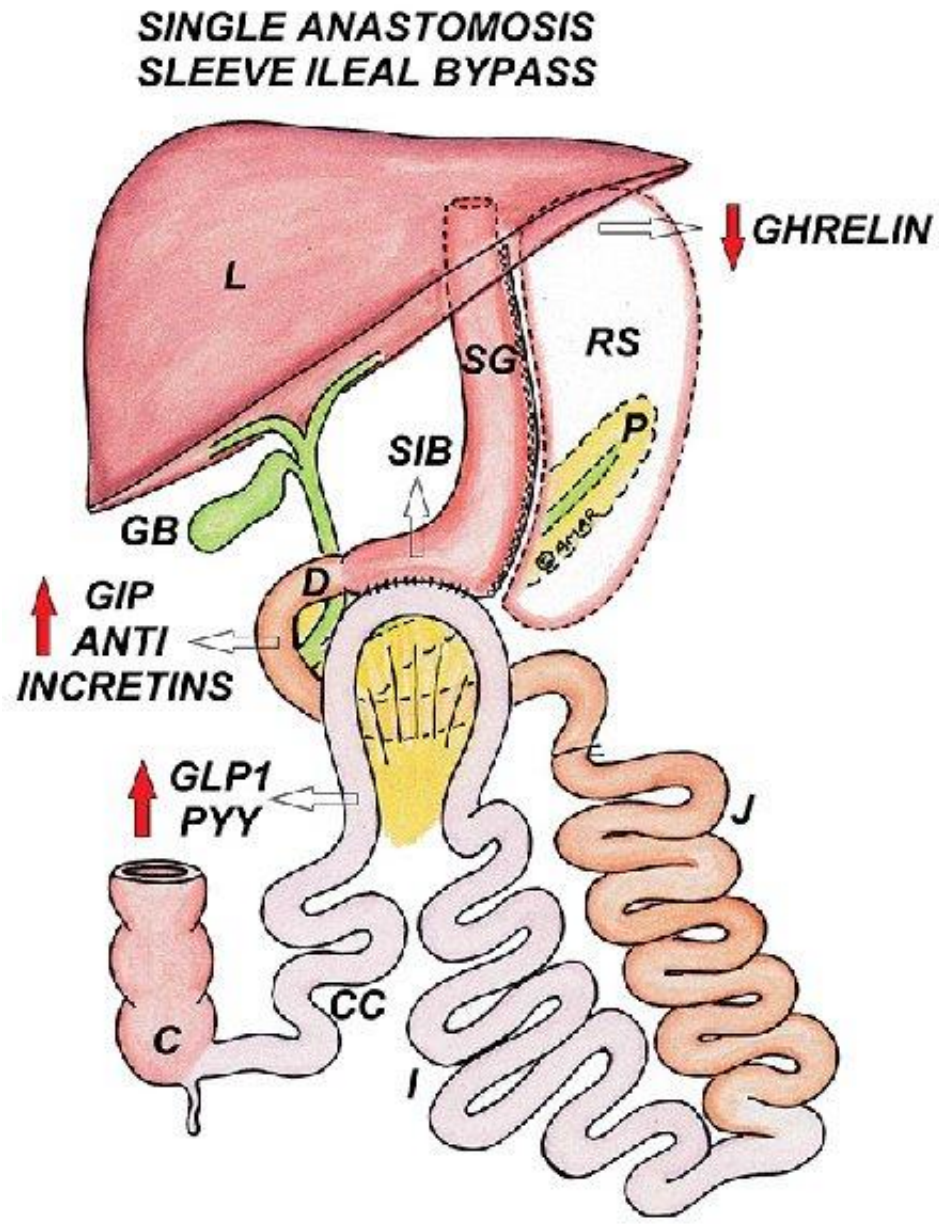
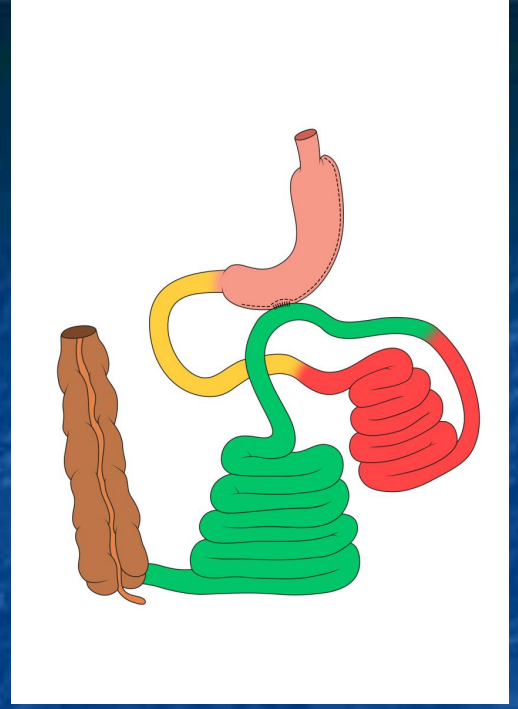


Image source: Ugale et al. 2017 Ann laparosc Endosc Surg



Single Anastomosis TB

521 cases of DM patients with single anastomosis TB

Prof. T a r e k M a h d y

Professor of Bariatric and Metabolic Surgery – Mansoura Faculty Of medicine –Egypt

@ Obesity week , Nashville , 2018

Data from Prof. Tarek Mahdy
Presented at Obesity Week, Nashville, USA, 2018

Remission of Comorbidities

Co-morbidity	Number	Remission
Hypertension	202	143 (70.7%)
Hypertriglyceridemia	357	301 (84.3 %)
Hypercholesterolemia	386	354 (91.7 %)
Type 2 Diabetes	521	496 (95.2 %)
Sleep Apnea	47	39 (82.9 %)

Data from Prof. Tarek Mahdy
Presented at Obesity Week, Nashville, USA, 2018

Obesity Surgery (2024) 34:371–381
https://doi.org/10.1007/s11695-023-06988-3

IFSO

ORIGINAL CONTRIBUTIONS

Check for updates

One Anastomosis Transit Bipartition (OATB): Rational and Mid-term Outcomes

Rui Ribeiro[1,2,3] · Octávio Viveiros[1,2,3] · Viorel Taranu[1,2] · Carina Rossoni[1,4,5]

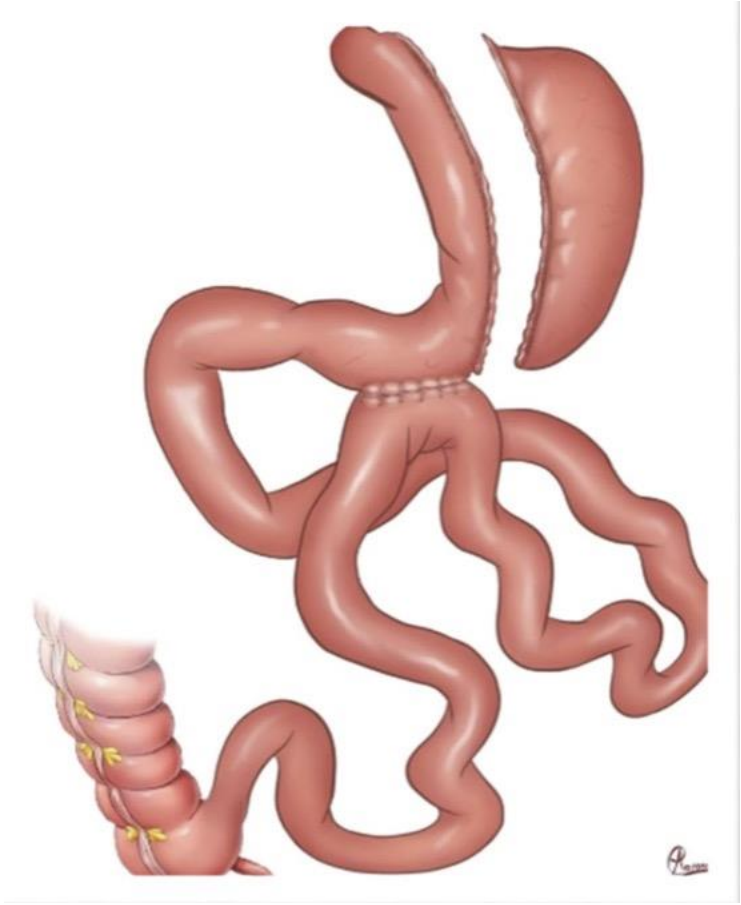
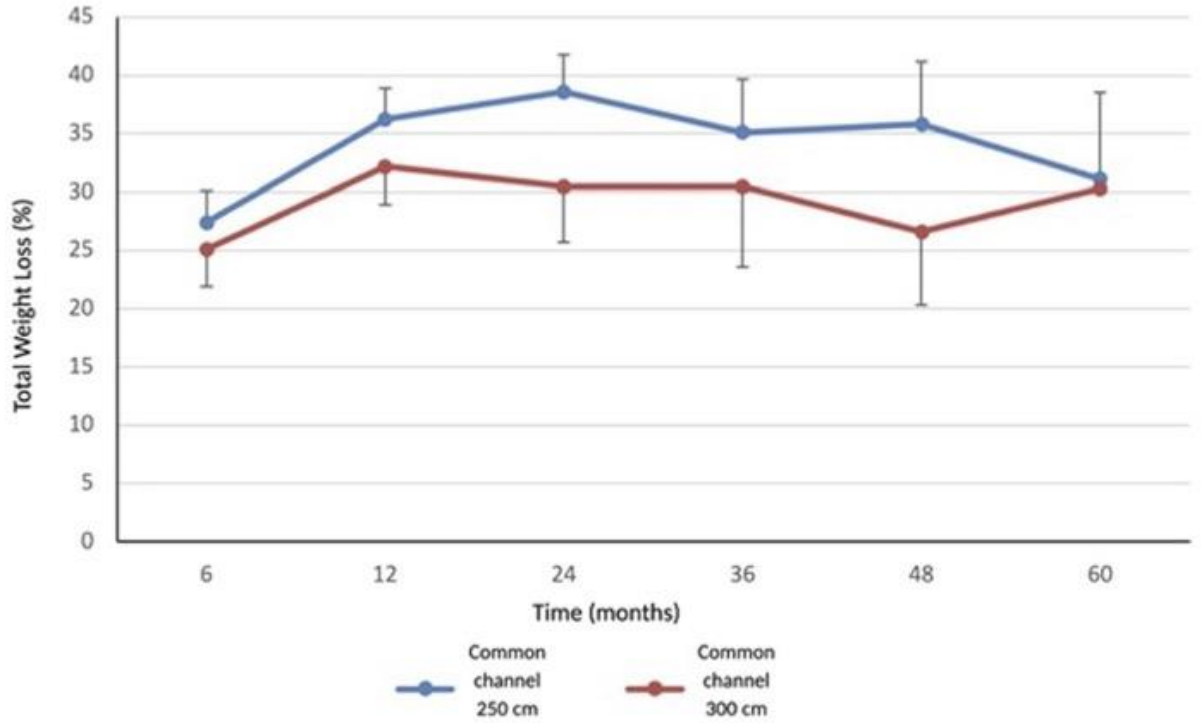
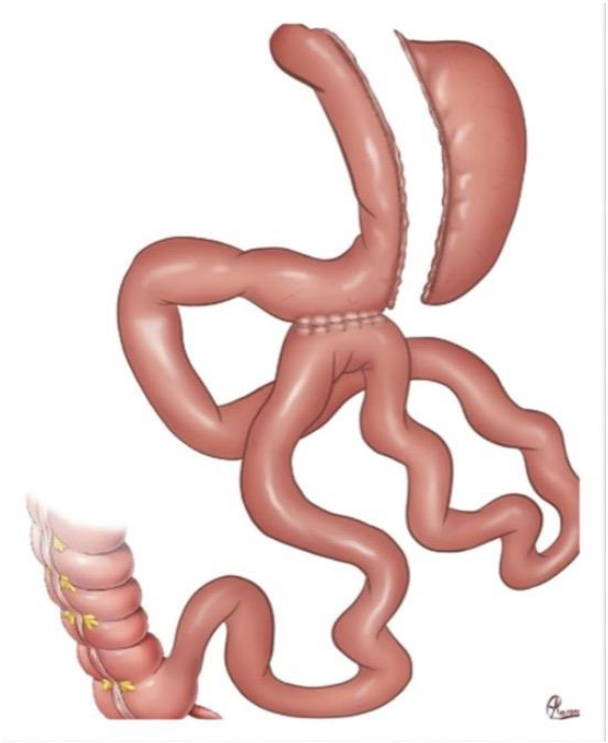


Table 1 Demographic and clinical characteristics of study participants ($n = 68$)

Characteristics	Participants Mean ± SD or $n = 68$ (100%)
Age (years)	45.5 ± 12.1
Gender	
Women	51 (75%)
Men	17 (25%)
Antropometrics	
Weight (kg)	112.3 ± 19.3
Height (m)	1.65 ± 0.08
BMI (kg/m^2)	41.0 ± 5.8
Comorbidities	
Hipertension	33 (48.5)
Dyslipidemia	27 (39.7)
Type 2 diabetes	27 (39.7)
Hyperuricemia	*2 (2.9)*
Osteoarthritis	*36 (52.9)*
Snoring/OSAS	*38 (55.9)*
Cholelithiasis	*5 (7.4)*
Hiatal hernia	*7 (10.3)*
GERD	*21 (30.9)*
Depression	*25 (36.8)*
Lower limbs varices	*18 (26.5)*

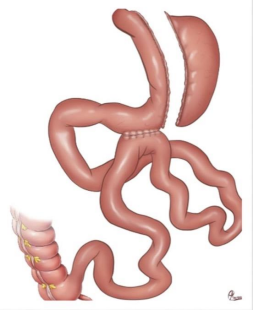
Fig. 3 Percentage of total weight loss percentage (%TWL) according to the length of the common channel (250 cm and 300 cm) over 60 months after surgery ($n=68$)





Reduction in total weight (%)	CC 250 cm		CC 300 cm		Differences (IC 95%)	Effect Size	p
	n	Average ± DP	n	Average ± DP			
6 months	41	27,4 ± 8,9[a]	27	25,1 ± 8,7[a]	2,34 (-1,84 a 6,52)	0,27	0,273
12 months	41	36,2 ± 9,0[b]	27	32,2 ± 9,0[b]	4,05 (-0,25 a 8,35)	0,45	0,065
24 months	36	38,6 ± 10,1[c]	17	30,5 ± 10,5[b]	8,12 (2,27 a 14,0)	0,79	0,007
36 months	24	35,1 ± 11,9[b]	10	30,5 ± 11,6[ab]	4,57 (-3,70 a 12,8)	0,39	0,278
48 months	18	35,8 ± 12,1[bc]	4	26,6 ± 7,4[ab]	9,14 (0,81 a 17,5)	0,79	0,032
60 months	11	31,1 ± 13,0[ab]	1	30,3 ± 0,0[b]	0,82 (-6,52 a 8,15)	0,06	0,827

[a,b,c] Equal letters do not differ by the Least Significant Difference (LSD) test at 5% significance.
CC = common channel.



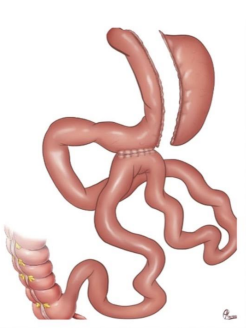


Table 3 Evolution of postoperative comorbidities according to the length of the common channel 250 cm and 300 cm, respectively ($n=68$)

Comorbidities	No medication		With medication		Stable		Worse		p
	250 cm	300 cm	250 cm	300 cm	250 cm	300 cm	250 cm	300 cm	
Hypertension	14/20 (70.0)	11/14 (78.6)	5/20 (25.0)	3/14 (21.4)	0/20 (0.0)	0/14 (0.0)	1/20 (5.0)	0/14 (0.0)	0.661
Dyslipidemia	13/17 (76.5)	7/10 (70.0)	4/17 (23.5)	3/10 (30.0)	0/17 (0.0)	0/10 (0.0)	0/17 (0.0)	0/10 (0.0)	1.000
Type 2 diabetes	18/19 (94.7)	8/9 (88.9)	1/19 (5.3%)	1/9 (11.1)	0/10 (0.0)	0/9 (0.0)	0/10 (0.0)	0/9 (0.0)	1.000
Hyperuricemia	-	*1/2 (50.0)*	-	1/2 (50.0)	-	0/2 (0.0)	-	0/2 (0.0)	-
Osteoarthritis	*18/22 (81.8)*	*10/14 (71.4)*	4/22 (18.2)	3/14 (21.4)	0/22 (0.0)	1/14 (7.1)	0/22 (0.0)	0/14 (0.0)	0.420
Snoring/OSAS	*19/21 (90.5)*	*14/16 (87.5)*	2/21 (9.5)	1/16 (6.3)	0/21 (0.0)	0/16 (0.0)	0/21 (0.0)	1/16 (6.3)	0.486
DRGE	*13/14 (92.9)*	*6/7 (85.7)*	1/14 (7.1)	1/7 (14.3)	0/14 (0.0)	0/7 (0.0)	0/14 (0.0)	0/7 (0.0)	1.000
Depression	*4/14 (28.6)*	*1/10 (10.0)*	10/14 (71.4)	9/10 (90.0)	0/14 (0.0)	0/10 (0.0)	0/14 (0.0)	0/10 (0.0)	0.358
Lower limbs varices	*12/15 (80.0)*	*4/8 (50.0)*	3/15 (20.0)	4/8 (50.0)	0/15 (0.0)	0/8 (0.0)	0/15 (0.0)	0/8 (0.0)	0.182

Expert Review of Gastroenterology & Hepatology

ISSN: (Print) (Online) Journal homepage: https://www.tandfo...om/loi/ierh20

Table 1. Weight loss after SG-TB.

Author	Year	Country	Number	Follow-up time	BMI	BMI after surgery	EBMIL%	TWL%
Santoro	2012	Brazil	1020	5 years	42.2	-	74 ± 22.5	-
Arslan	2018	Turkey	7	3 months	35.56 ± 1.71	27 ± 1.15	75.15 ± 9.12	-
Azevedo	2018	Brazil	10	2 years	33.4 ± 2.6	30.9 ± 2.5	-	-
Yormaz	2018	Italy	19	1 year	36.59 ± 2.16	25.56 ± 2.26	-	27.14 ± 6.28
Bilecik	2018	Turkey	35	1 year	42.0 ± 1.3	24.8 ± 1.6	-	-
Kacaca	2020	Turkey	45	1 year	38.05 ± 8.7	24.8 ± 2.4	-	-
Topart	2020	France	71	2 years	51.6 ± 5.0	29.2 ± 4.5	85.3 ± 15.8	44.8 ± 8.2
Calisir	2021	Turkey	32	3 years	44.7 ± 9.34	29.75 ± 2.19	77.19 (EWL%)	33.84
Ece	2021	Turkey	26	1 year	47.3 ± 6.1	-	68.4 ± 15.6 (EWL%)	29.7
Al	2022	Switzerland	335	2 years	34.0 ± 4.6	27 ± 3.4	87.7 ± 35.2	20.2 ± 6.1

Table 2. Weight loss after SASI bypass.

Author	Year	Country	Number	Follow-up time	BMI	BMI after surgery	EWL%	TWL%
Mahdy	2016	Norway	50	1 year	48.7 ± 7.6	-	90	-
Salama	2016	Egypt	45	1 year	43.2 ± 3.472	29.1	-	-
Kermansaravi	2020	Iran	42	1 year	44.2 ± 4.3	28.1 ± 4.8	86.2 ± 24.0	36.5 ± 9.0
Mandyan	2020	Egypt	20	1 year	53.7 ± 5.9	23.6 ± 6	65.2 ± 12.6	-
Mahdy	2020	Norway	551	1 year	43.2 ± 12.5	31.2 ± 9.7	63.9 ± 29.5	27.4 ± 13.4
Emile	2020	Egypt	58	1 year	48.9 ± 16.9	30.6 ± 5.5	72.6 ± 14.03	-
Khalaf	2021	Egypt	322	2 years	50.1 ± 7.7	-	96.7 ± 5.0	-
Romero	2021	Mexico	83	1 year	40.9 ± 7.1	28.2 ± 4.5	85.6 ± 27.3	-
Hosseini	2022	Iran	116	3 years	43.54 ± 3.88	28.72 ± 5.15	80.6 ± 28.93	31.81 ± 11.37
Tarnowski	2022	Poland	19	1 year	40.3 ± 3.74	-	88.83 ± 25.5	37.67 ± 6.59

Table 3. Remission in medical comorbidities after SG-TB.

Author	HbA1c	HbA1c after surgery	% remission in DM	% remission in hypertension	% remission in hyperlipidemia	% remission in OSA
Santoro	-	-	86	72	70 (hypercholesterolemia) 85 (hypertriglyceridemia)	91 (respiratory problems)
Arslan	8.18 ± 1.3	6.04 ± 0.41	85.7	-	-	-
Azevedo	9.3 ± 2.1	5.5 ± 1.1	90	100	100	-
Yormaz	9.04 ± 1.23	6.04 ± 1.51	82.9	-	-	-
Bilecik	9.1 ± 1.0	5.2 ± 0.4	88.6	-	55	-
Kacaca	9.1 ± 1.35	5.63 ± 0.58	88.8	-	-	-
Topart	-	-	80	77	-	88
Calisir	9.25 ± 1.86	5.35 ± 0.41	84.3	-	100	-
Ece	9.0 ± 1.2	5.4 ± 1.1	77	68.3	-	-
Al	9.8 ± 1.4	6.2 ± 0.7	79.2	-	-	-

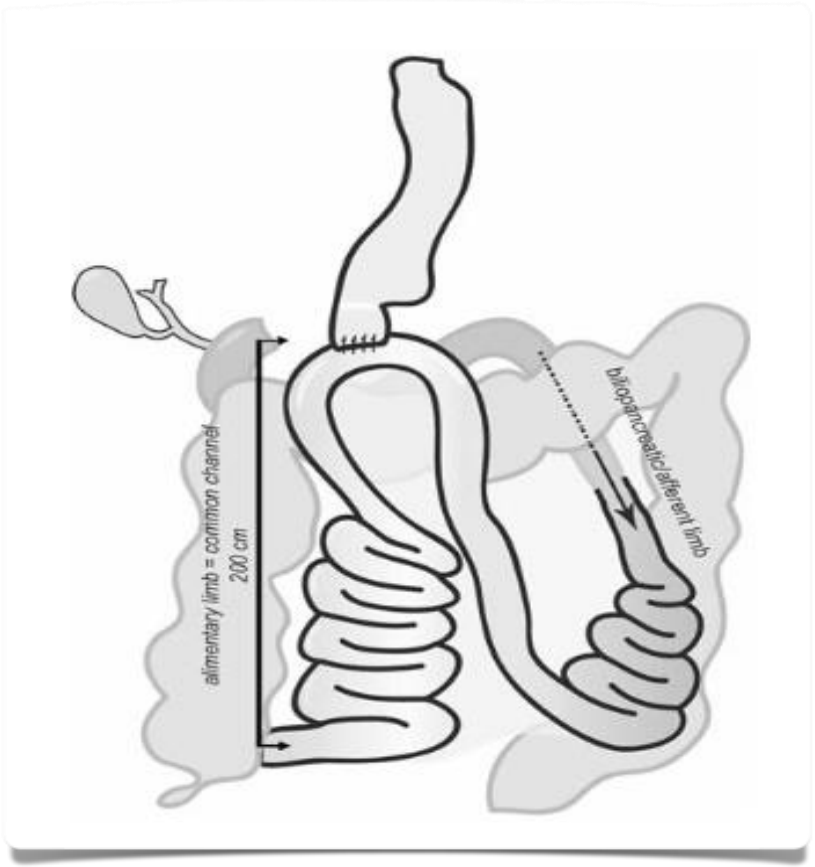
Note: DM: Diabetes mellitus; OSA: Obstructive sleep apnea.

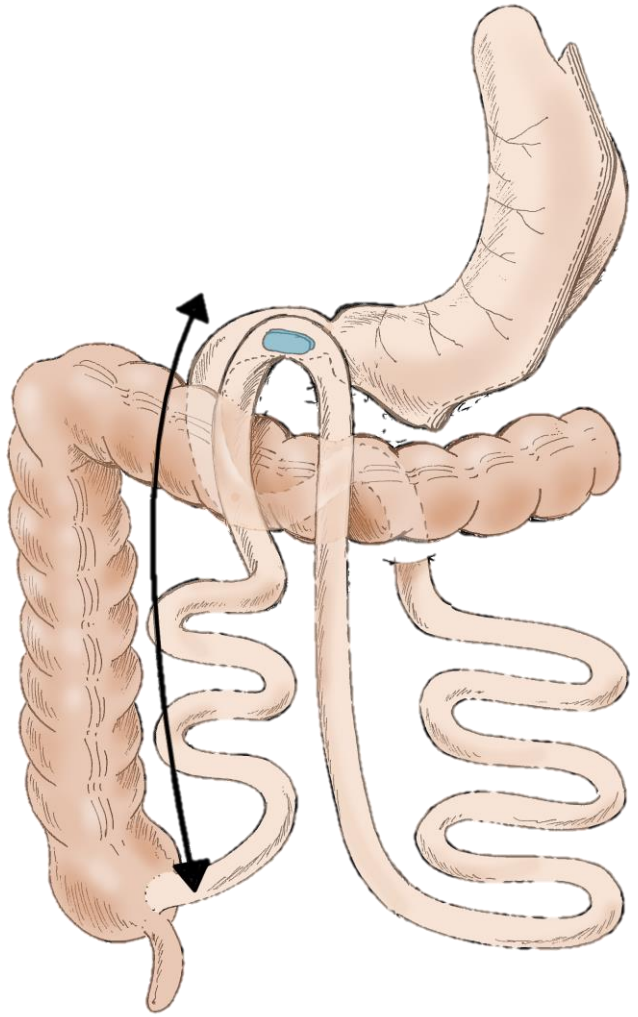
Table 4. Remission or improvement in medical comorbidities after SASI bypass.

Author	% in DM	% in hypertension	% in hyperlipidemia	% in OSA	% in GERD	Remission or improvement
Mahdy	100	86	100 (hypercholesterolemia) 97 (hypertriglyceridemia)	-	-	Improvement
Kermansaravi	89	86	100	100	-	Remission
Mandyan	100	75	-	-	100	Improvement
Mahdy	83.9	36.1	65	57.8	92.1	Remission
Emlie	95.8	57.1	87.5	-	85.7	Improvement
Khalaf	97.9	70.4	-	100	80.7	Remission
Romero	96	91.3	91.9	70.9	75	Remission
Hosseini	65	50	100	78.5	-	Remission
Tarnowski	100	80	-	-	-	Remission

Note: DM: Diabetes mellitus; OSA: Obstructive sleep apnea; GERD: Gastroesophageal reflux disease.

SADIS → Duodenal-Bipartition





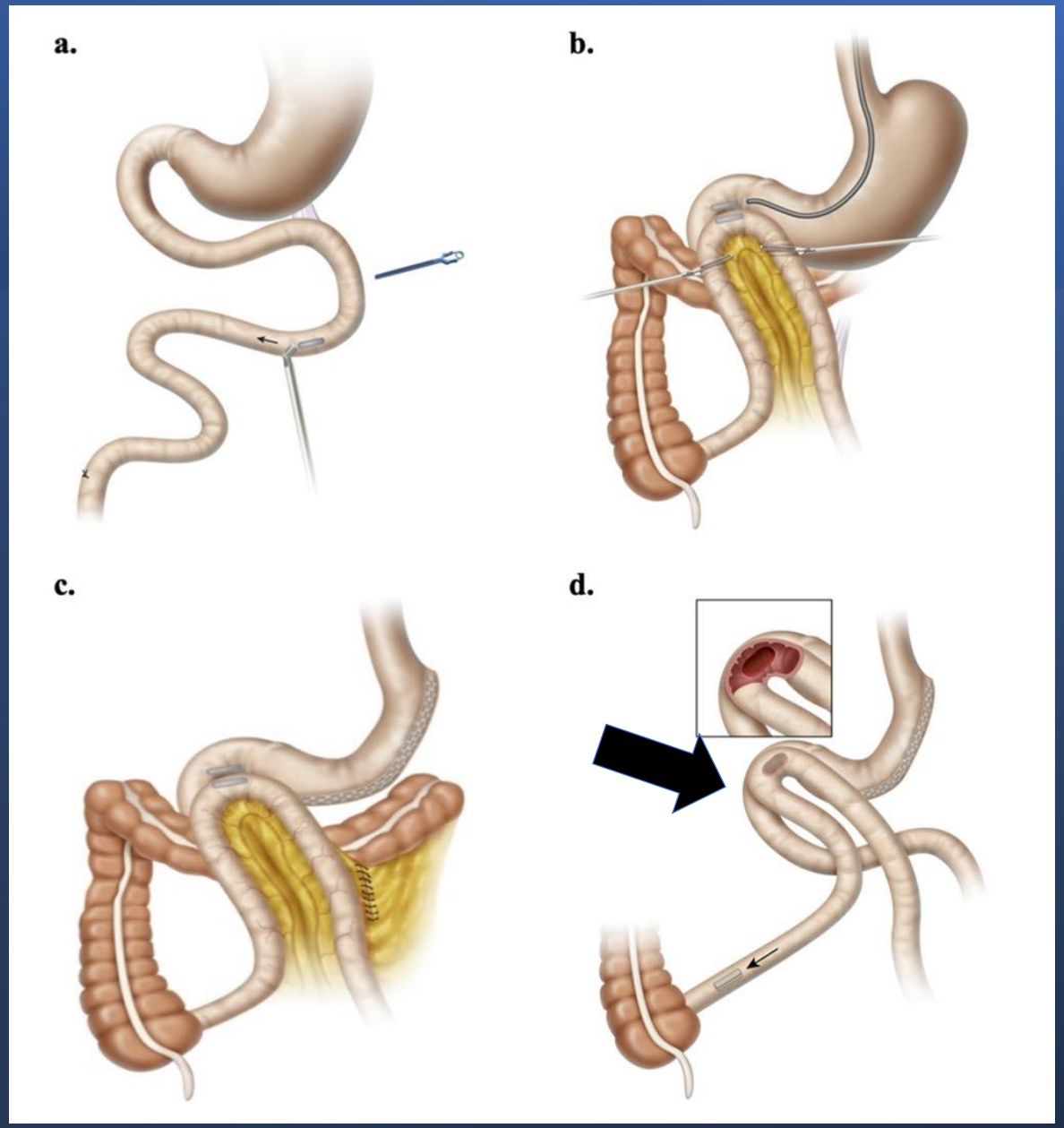
Duodenal-Bipartition: advantages

- Early stimulation of GLP-1 and PYY 3-36
- Partial derivation of calories, and decreased absorption of fat
- Main duodenal absorption of minerals and B,C complex vitamins
- Access to main duodenum (like ERCP)
- Decrease bile reflux (post-pyloric connection)

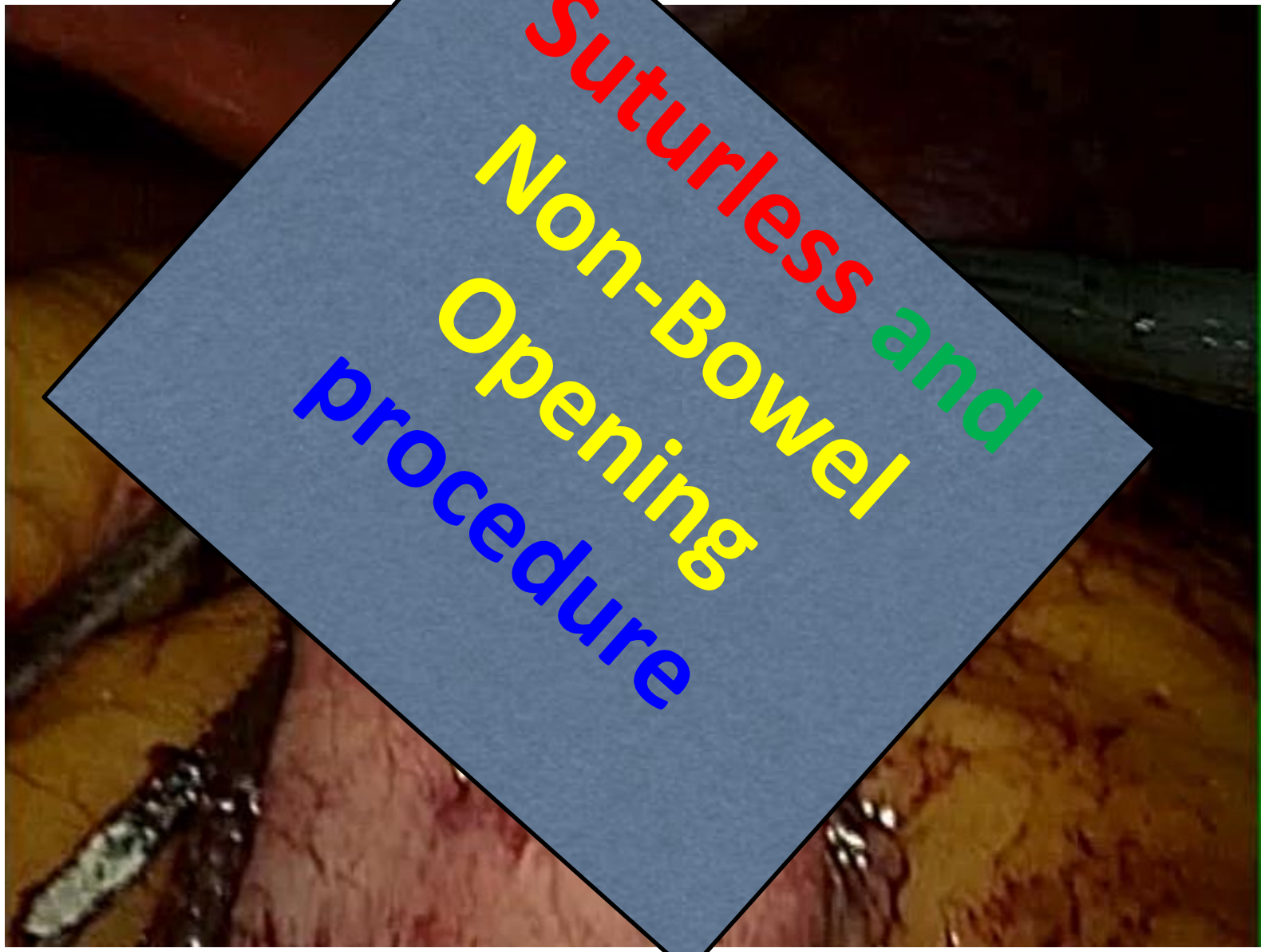
Methodology

- Multicentric study
  - Stage 1 - first in human and proof of concept (5 patients)
  - Stage 2 - feasibility (30 patients)
- 5 centers in Canada and Europe
- Ethics committee approval and AEMPS approval
- Independent Data Safety Monitoring Board

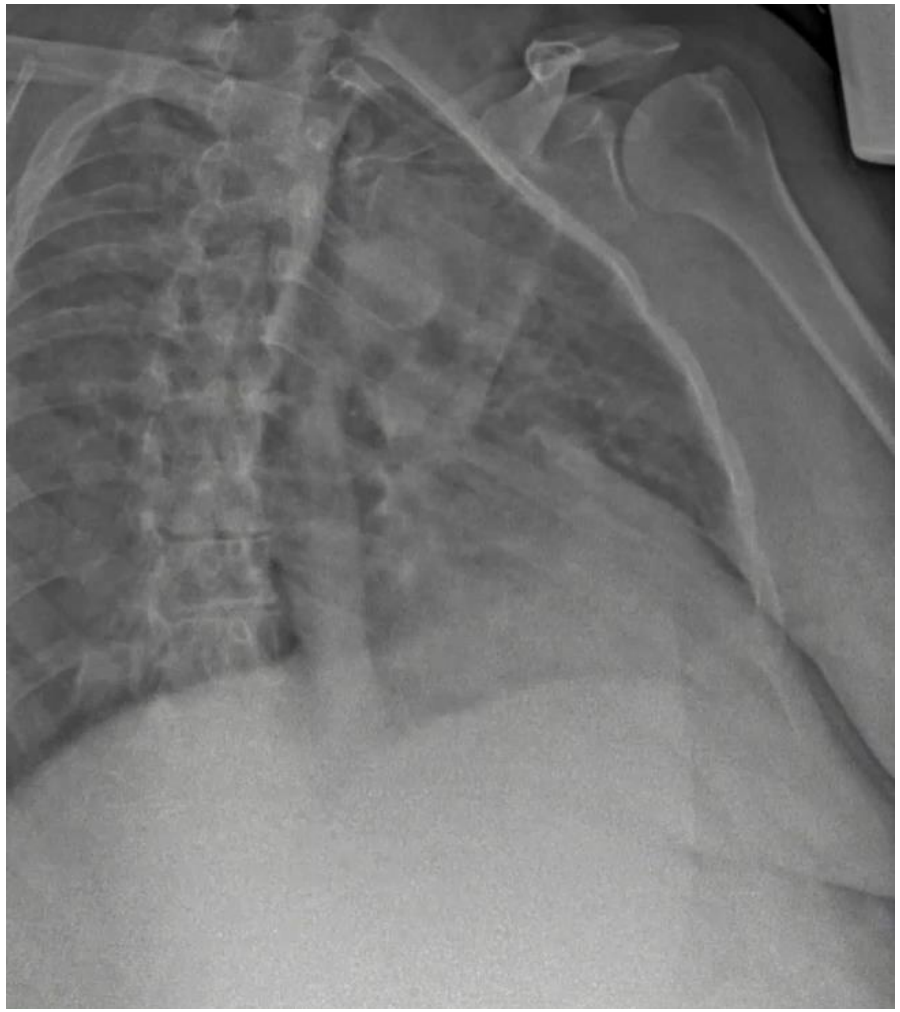
A prospective observational open-label evaluation (Clinicaltrials.gov NCT#05,322,122) of the investigational Mag-


a.
b.
c.
d.

Surgical technique



- First pass of contrast on fluoroscopy - 17 (15-66) days



- Magnet expulsion: 42 (20-134) days

Surgical Endoscopy (2023) 37:6452–6463
https://doi.org/10.1007/s00464-023-10134-6

2023 SAGES ORAL

Side-to-side magnet anastomosis system duodeno-ileostomy with sleeve gastrectomy: early multi-center results

Michel Gagner[1,8] · Guy-Bernard Cadiere[2] · Andres Sanchez-Pernaute[3] · David Abuladze[4] · Todd Krinke[5] · J. N. Buchwald[6] · Nathalie Van Sante[7] · Marc Van Gossum[2] · Jana Dziakova[3] · Levan Koiava[4] · Maja Odovic[3] · Mathilde Poras[2] · Lamees Almutlaq[1] · Antonio J. Torres[3]

Table 2 Evolution of weight and clinical parameters after side-to-side magnetic duodeno-ileostomy with sleeve gastrectomy

	Baseline	6-month follow-up (n = 24)			12-month follow-up (n = 5)		
	Mean ± SEM	Mean ± SEM	Mean change ± SEM (95%CI)	P-value	Mean ± SEM	Mean change ± SEM (95%CI)	P-value
Weight							
Absolute wt, kg	121.9 ± 3.3	87.8 ± 2.8	34.2 ± 1.6 (30.9, 37.4)	< 0.001	77.6 ± 4.7	40.0 ± 3.1 (31.4, 48.6)	< 0.001
BMI, kg/m^2	44.4 ± 0.8	32.0 ± 0.8	12.4 ± 0.5 (11.5, 13.3)	< 0.001	29.3 ± 1.5	15.1 ± 1.0 (12.2, 18.0)	< 0.001
TWL, %	–	28.1 ± 1.0	–	–	34.0 ± 1.4	–	–
EWL, %	–	66.2 ± 3.4	–	–	80.2 ± 6.6	–	–
Clinical							
$HbA1_C$, %*	6.2 ± 0.3	5.1 ± 0.2	1.1 ± 0.4 (0.2, 1.9)	< 0.05	4.8 ± 0.2	2.0 ± 1.1 _††	0.173
Glucose, mg/dL†	111.3 ± 6.1	86.5 ± 3.5	24.8 ± 6.6 (11.0, 38.6)	< 0.001	87.3 ± 6.3	53.8 ± 6.3 _††	0.113

BMI: Body mass index; *TWL*: Total weight loss; *EWL*: Excess weight loss; *$HbA1_C$*: Glycosylated hemoglobin

*$HbA1_C$ baseline n = 20; 6-month n = 19; 12-month n = 4

†Glucose baseline n = 21; 6-month n = 21; 12-month n = 4

††Not applicable due to small sample size

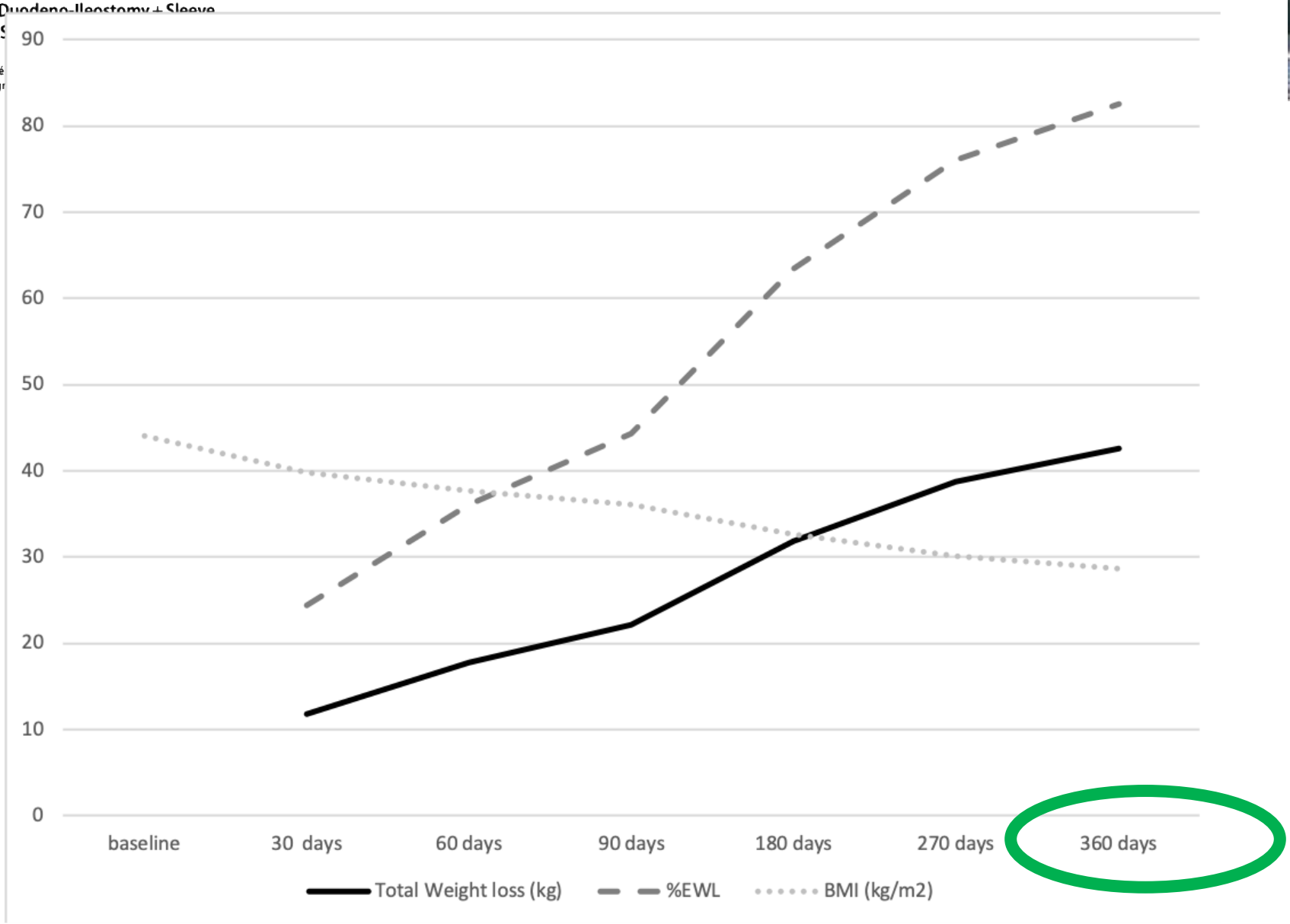
Obesity Surgery (2024) 34:3569–3575
https://doi.org/10.1007/s11695-024-07432-w

NEW CONCEPT

Spanish Experience with Latero-Lateral Duodeno-Ileostomy + Sleeve Gastrectomy with Magnet Anastomosis S

Jana Dziakova[1,2,3] · Antonio Torres[1,2,3] · Maja Odovic[1] · José Andrea Castillo[1] · Andrés Sánchez-Pernaute[1,2,3] · Michel Gagr

Figure 3: Mean changes in body mass index (BMI, kg/m^2); total weight loss (%TWL); and in excess weight loss (%EWL)



Obesity Surgery (2024) 34:3569–3575
https://doi.org/10.1007/s11695-024-07432-w

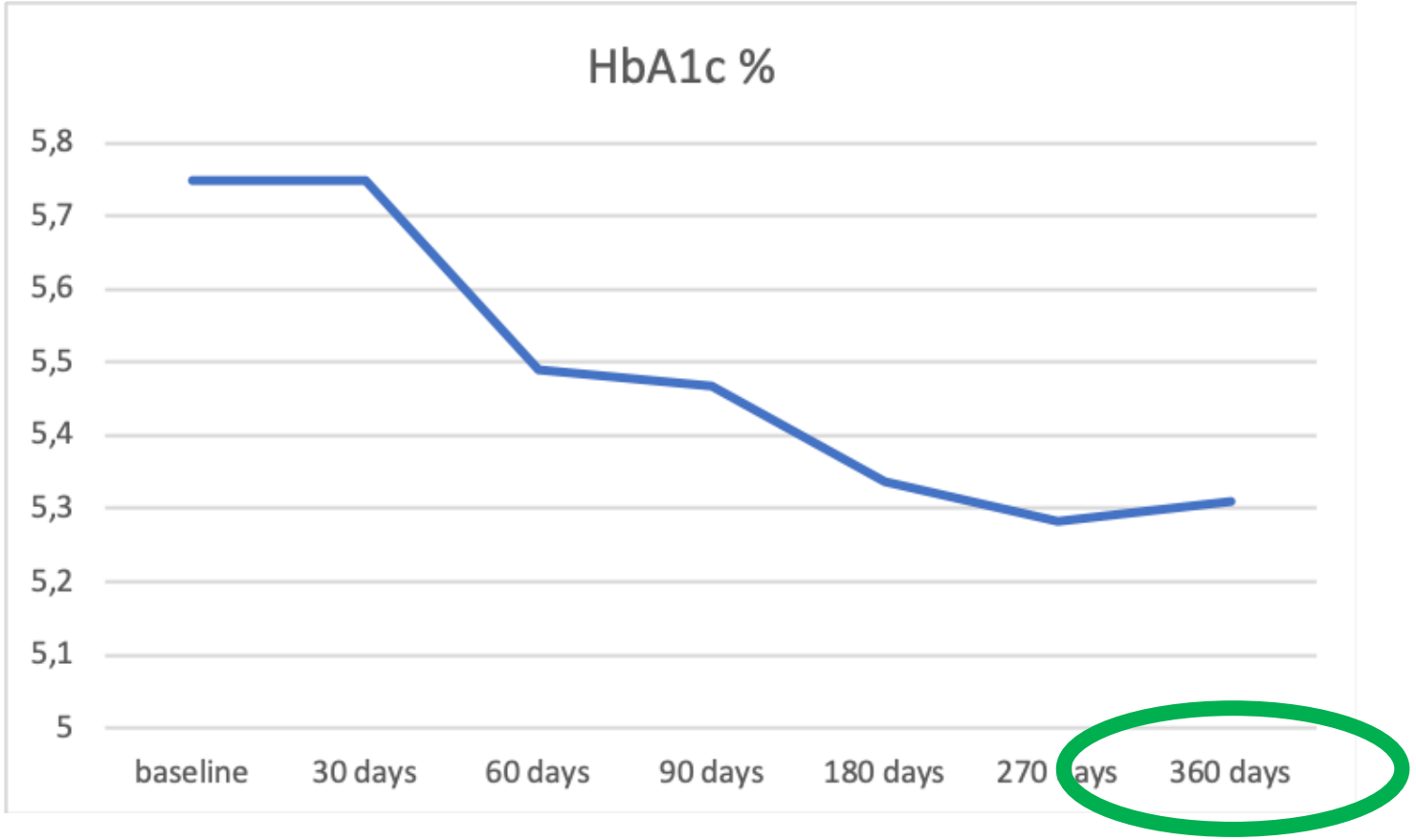
IFSO

NEW CONCEPT

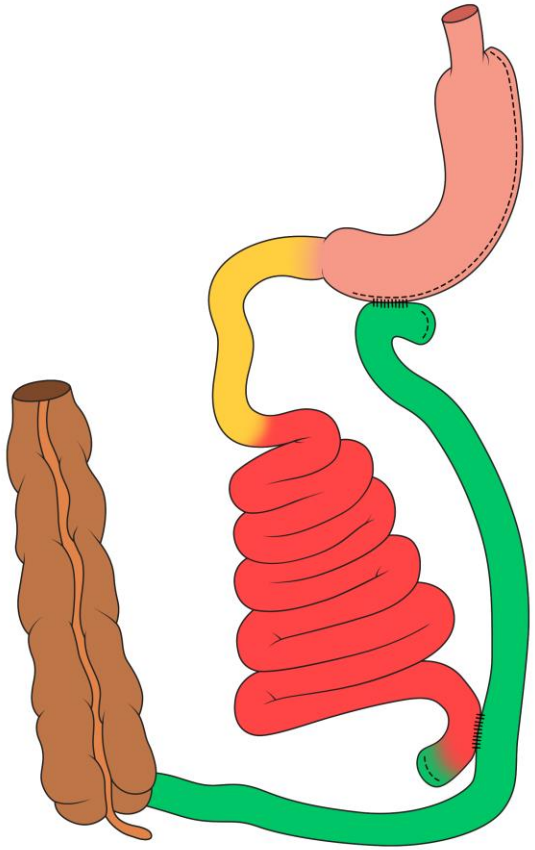
Spanish Experience with Latero-Lateral Duodeno-Ileostomy + Sleeve Gastrectomy with Magnet Anastomosis System

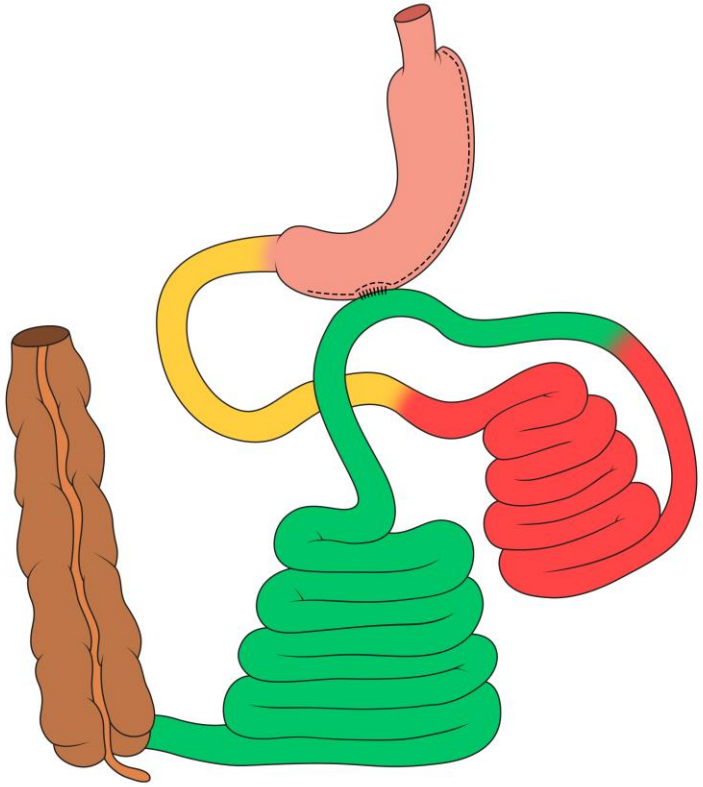
Jana Dziakova[1,2,3] · Antonio Torres[1,2,3] · Maja Odovic[1] · José Miguel Esteban[4] · Manuel Vázquez-Romero[4] · Andrea Castillo[1] · Andrés Sánchez-Pernaute[1,2,3] · Michel Gagner[5,6]

Figure 4: Mean changes of $HbA1_c$



Transit bipartition in 1 or 2 anastomoses





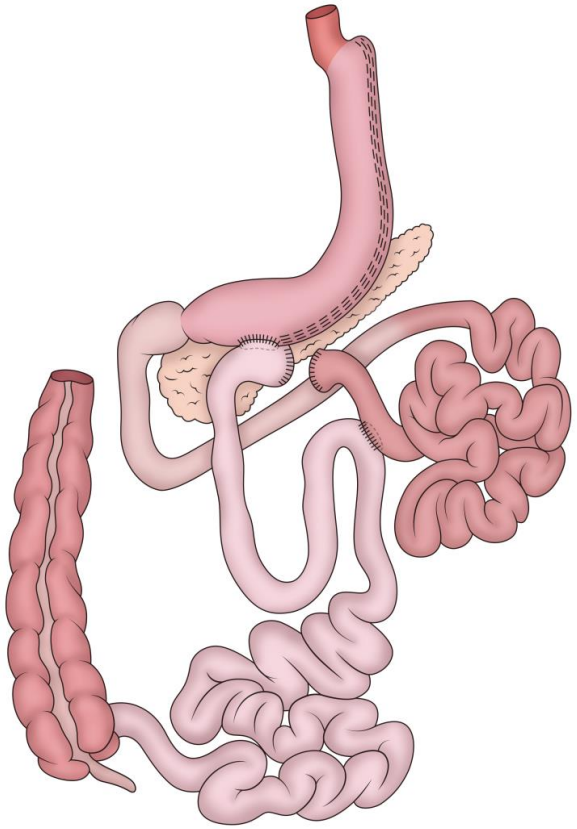
Transit Bipartition

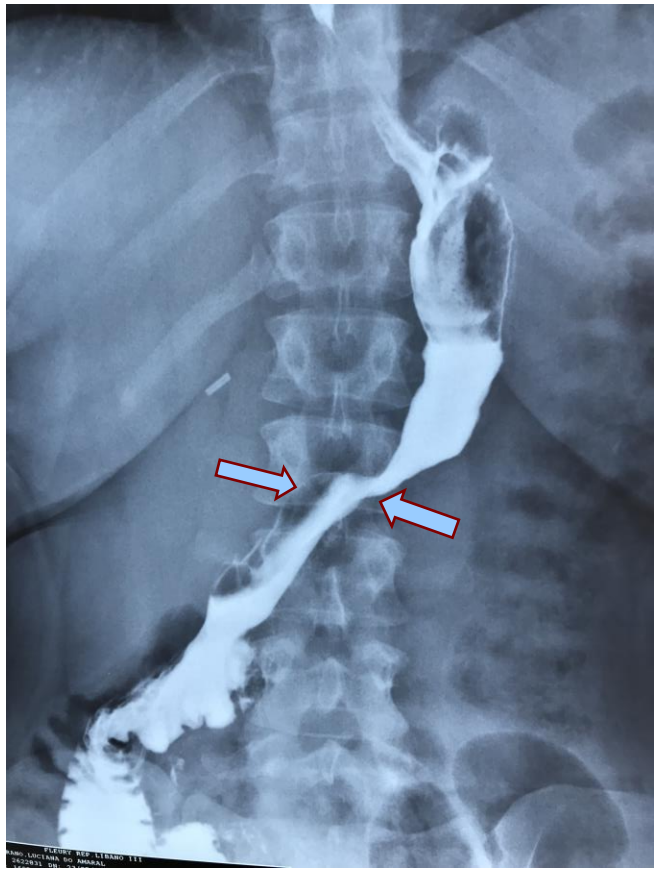
Tipica ? of the flux ge leum

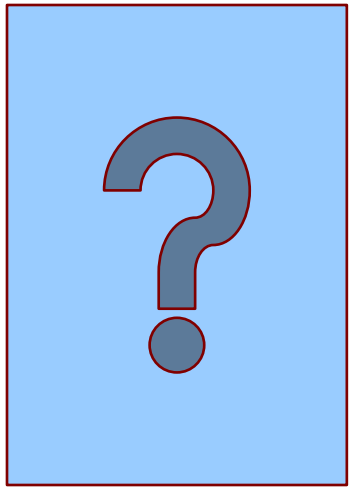
All limbs are alimentary limbs

Extended endoscopic access !

Caution : A gastroileal anastomosis with >4 cm practically excludes de duodenum!







"Bipartition Intestinal: A quién si y porqué?"

SG+TB was designe… mechanical restrictio…tion, excluded segments, and …e loss of some intestinal funct… (duodenal and jejunal)

- Low Pressure Sleeve: Less GERD ??

- Less Hypoabsortive
- Less Weight Loss ??
- Less Metabolic Effect ??

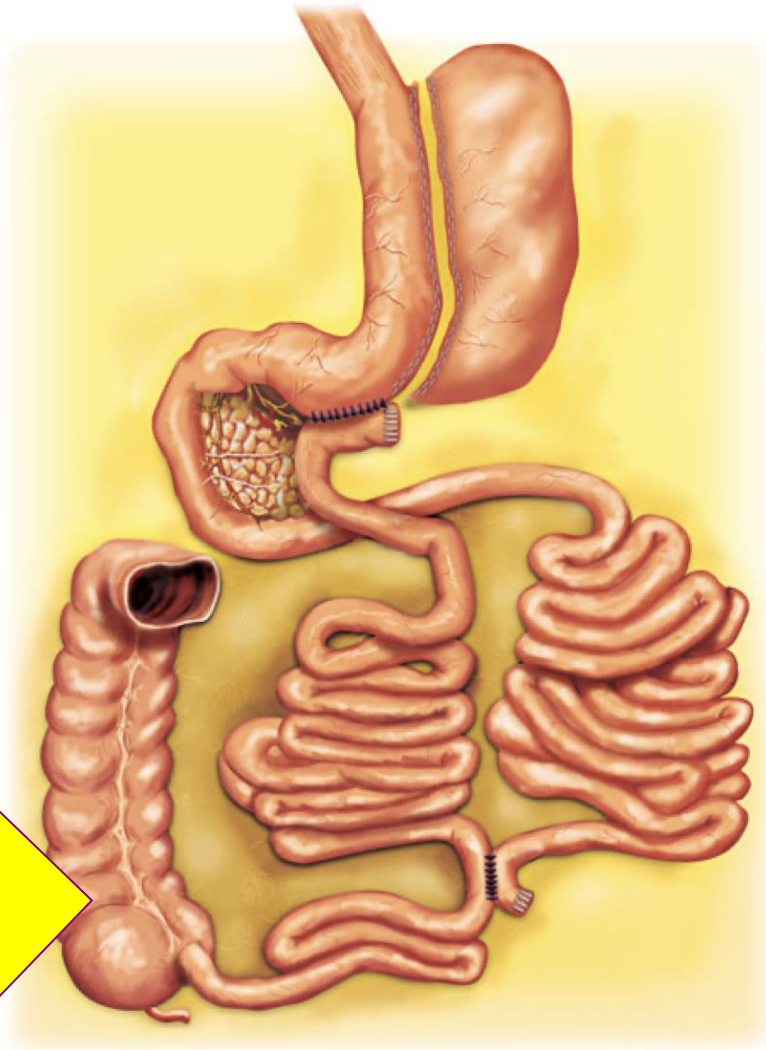
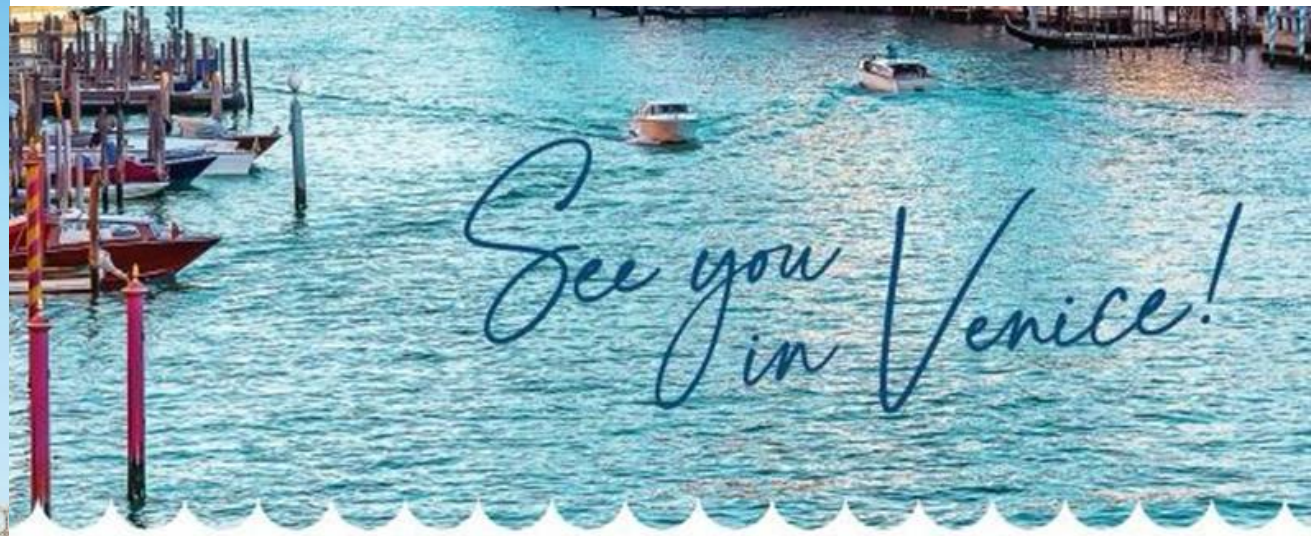


FIGURE 1. Didactic scheme of sleeve gastrectomy with transit bipartition.

IFSO

13th Congress of the International Federation for the Surgery of Obesity (IFSO) European Chapter

15-17 May 2025 | Venice, Italy



IFSO-EC2025.COM


INTEGRATE YOUR...
IFSO
MELBOURNE 2024
XXVII IFSO World Congress
3 - 6 September 2024
Melbourne Convention and Exhibition Centre
www.ifso2024.org
Congress Co-Presidents
Ahmad Aly & Harry Frydenberg
IFSO


Tak
Obrigado
감사합
Gracias
Merci
Thank you
Danke
Grazie

CO SAN CARLOS

ASMBS Metabolic and Bariatric Surgery Numbers Estimation for 2020

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	**158,000**	**173,000**	**179,000**	**193,000**	**196,000**	**216,000**	**228,000**	**252,000**	**256,000**	**199,000**
Sleeve	17.8%	33.0%	42.1%	51.7%	53.6%	58.1%	59.4%	61.4%	59.4%	61.4%
RYGB	36.7%	37.5%	34.2%	26.8%	23.0%	18.7%	17.8%	17.0%	17.8%	20.8%
Band	35.4%	20.2%	14%	9.5%	5.7%	3.4%	2.7%	1.1%	0.9%	1.2%
BPD-DS	0.9%	1.0%	1.0%	.4%	0.6%	0.6%	0.7%	0.8%	0.9%	1.8%
Revision	6.0%	6.0%	6.0%	11.5%	13.6%	14.0%	14.1%	15.4%	16.7%	11.1%
SADI	-	-	-	-	-	-	-	-	-	0.2%
OAGB	-	-	-	-	-	-	-	-	-	0.7%
Other	3.2%	2.3%	2.7%	0.1%	3.2%	2.6%	2.5%	2.3%	2.4%	0.6%
Balloon	-	-	-	-	0.3%	2.6%	2.8%	2.0%	1.8%	1.4%
ESG	-	--	-	-	-	-	-	-	-	0.8%

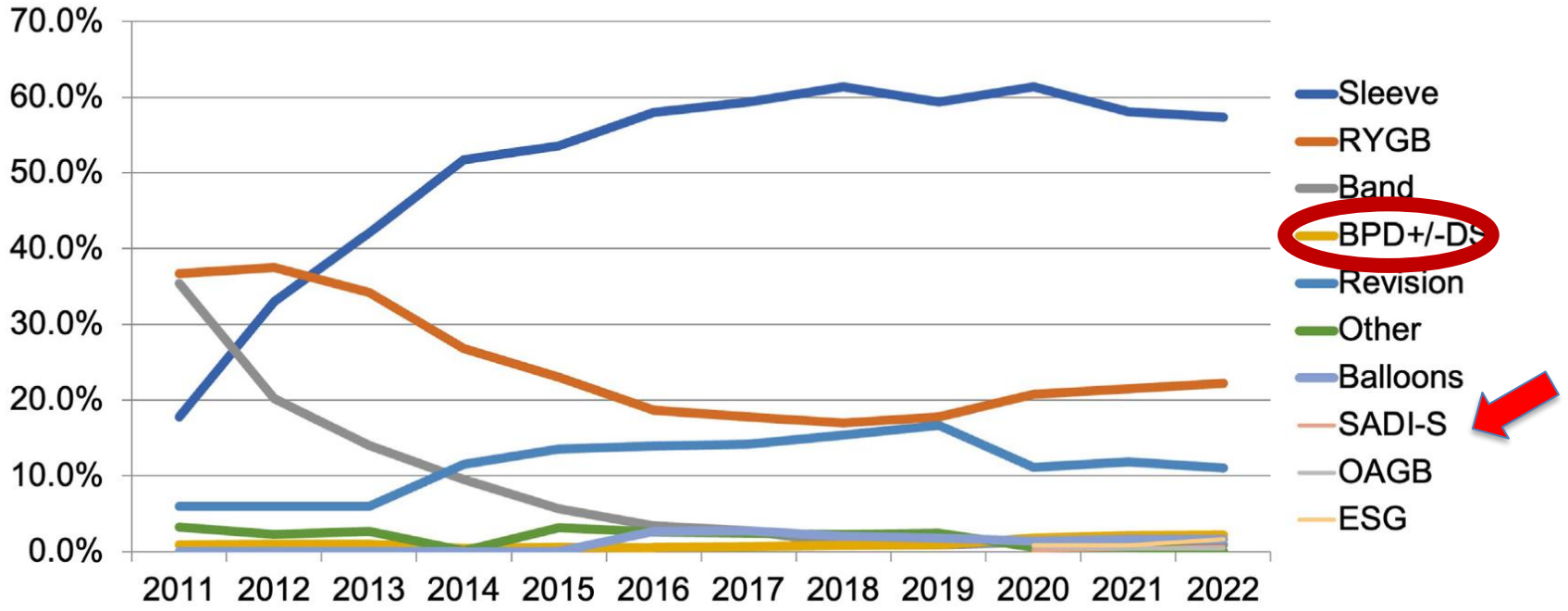


Fig. 2. Metabolic and bariatric surgery procedure percentage trends: 2011–2022. AGB = adjustable gastric band; BPD-DS = biliopancreatic diversion with duodenal switch; ESG = endoscopic sleeve gastroplasty; OAGB = one-anastomosis gastric bypass; RYGB = Roux-en-Y gastric bypass; SADI-S = single-anastomosis duodeno-ileostomy with sleeve; SG = sleeve gastrectomy.

Surgery for Obesity and Related Diseases 2024 20425-431DOI: (10.1016/j.soard.2024.01.012)

Table 1

Conclusion

There was a 6.5% increase in MBS volume from 2021 to 2022. SG continues to be the dominant procedure. We anticipate that the SADI-S and ESG will gain popularity in the coming years and will continue to be reported in future estimates.

Surgery for Obesity and Related Diseases 2024 20425-431DOI: (10.1016/j.soard.2024.01.012)