Management of Post-Sleeve GERD in People without Obesity

The role of Stretta, Linx and OAGB

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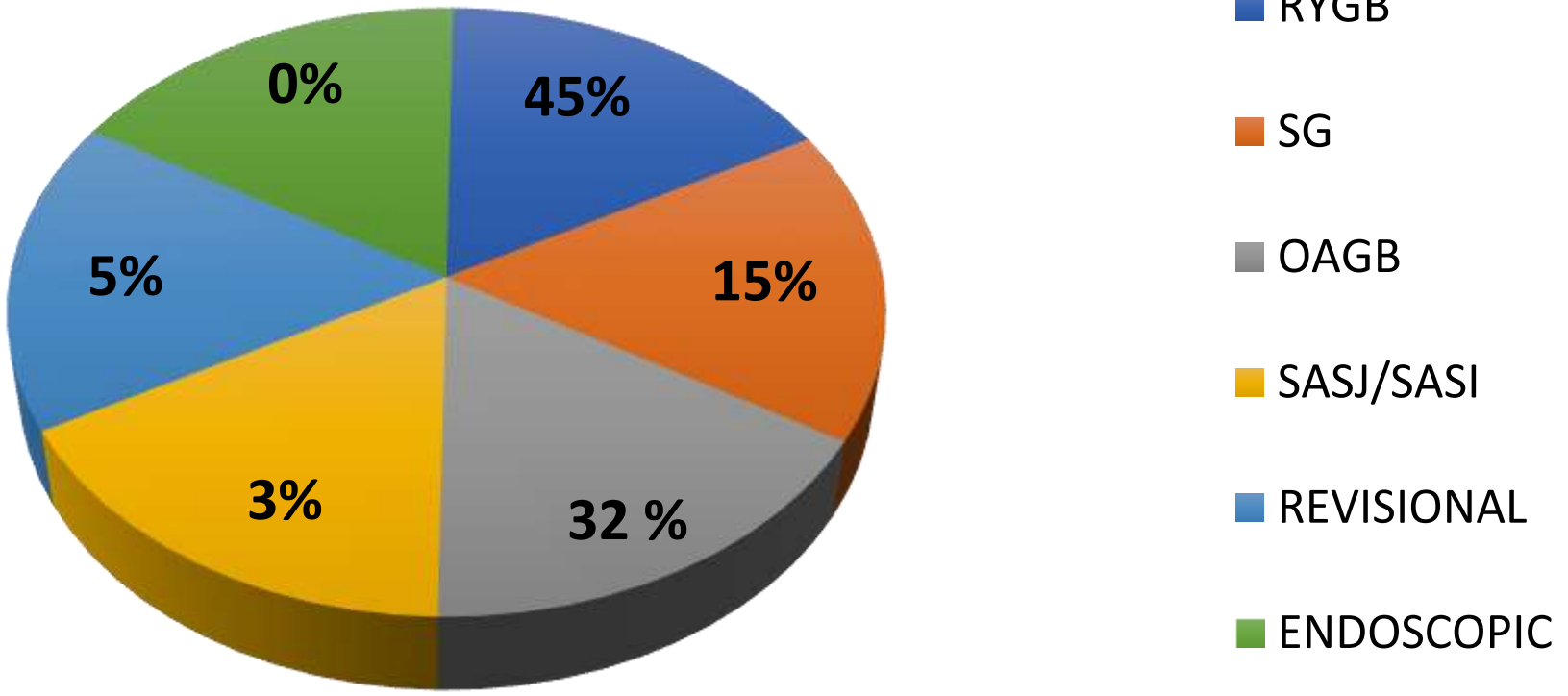
CONFLICT OF INTEREST DISCLOSURE

I have no potential conflict of interest to report

CASE MIX DISCLOSURE



Stretta

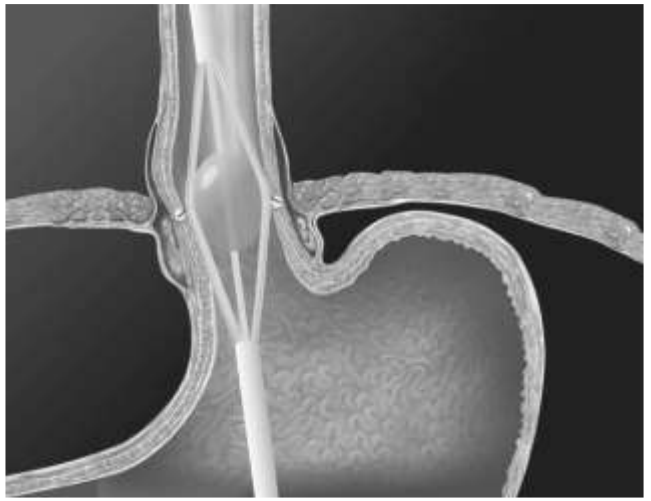
Stretta Procedure: Low-power, temperature-controlled RF energy by way of an endoluminal approach to the gastroesophageal junction for the treatment of gastroesophageal reflux disease (GERD).

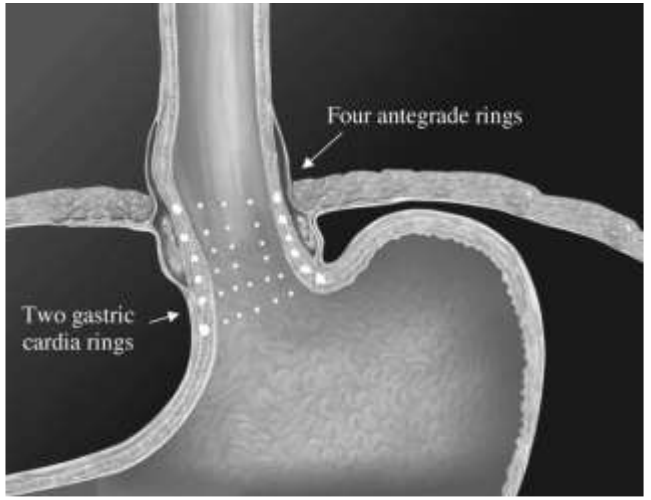
Stretta

-Outpatient basis (endoscopy unit or ambulatory surgery center) using intravenous conscious sedation.

-Collagen tissue contraction, remodeling, and modulation of the triggering threshold for transient LES relaxations.

-Thickening of the LES





Stretta

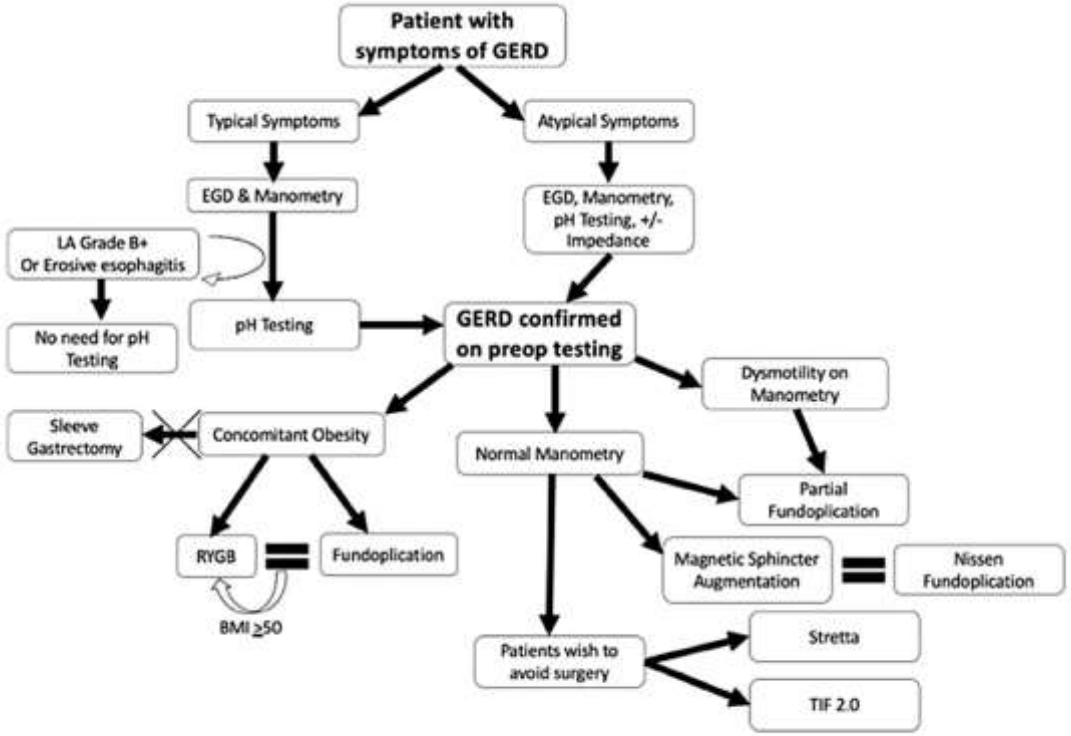


Fig. 1 Treatment Algorithm for adult patients with gastroesophageal reflux disease (GERD)

Surgical Endoscopy (2023) 37:781–806
https://doi.org/10.1007/s00464-022-09817-3

GUIDELINES

Multi-society consensus conference and guideline on the treatment of gastroesophageal reflux disease (GERD)

Bethany J. Slater[1] · Amelia Collings[2] · Rebecca Dirks[2] · Jon C. Gould[3] · Alia P. Qureshi[4] · Ryan Juza[5] · Maria Rita Rodriguez-Luna[6] · Claire Wunker[7] · Geoffrey P. Kohn[8] · Shanu Kothari[9] · Elizabeth Carslon[10] · Stephanie Worrell[11] · Ahmed M. Abou-Setta[12] · Mohammed T. Ansari[13] · Dimitrios I. Athanasiadis[2] · Shaun Daly[14] · Francesca Dimou[15] · Ivy N. Haskins[16] · Julie Hong[17] · Kumar Krishnan[18] · Anne Lidor[5] · Virginia Litle[19] · Donald Low[10] · Anthony Petrick[20] · Ian S. Soriano[21] · Nirav Thosani[22] · Amy Tyberg[23] · Vic Velanovich[24] · Ramon Vilallonga[25] · Jeffrey M. Marks[26]

Obesity Surgery (2018) 28:3125–3130
https://doi.org/10.1007/s11695-018-3333-6

ORIGINAL CONTRIBUTIONS

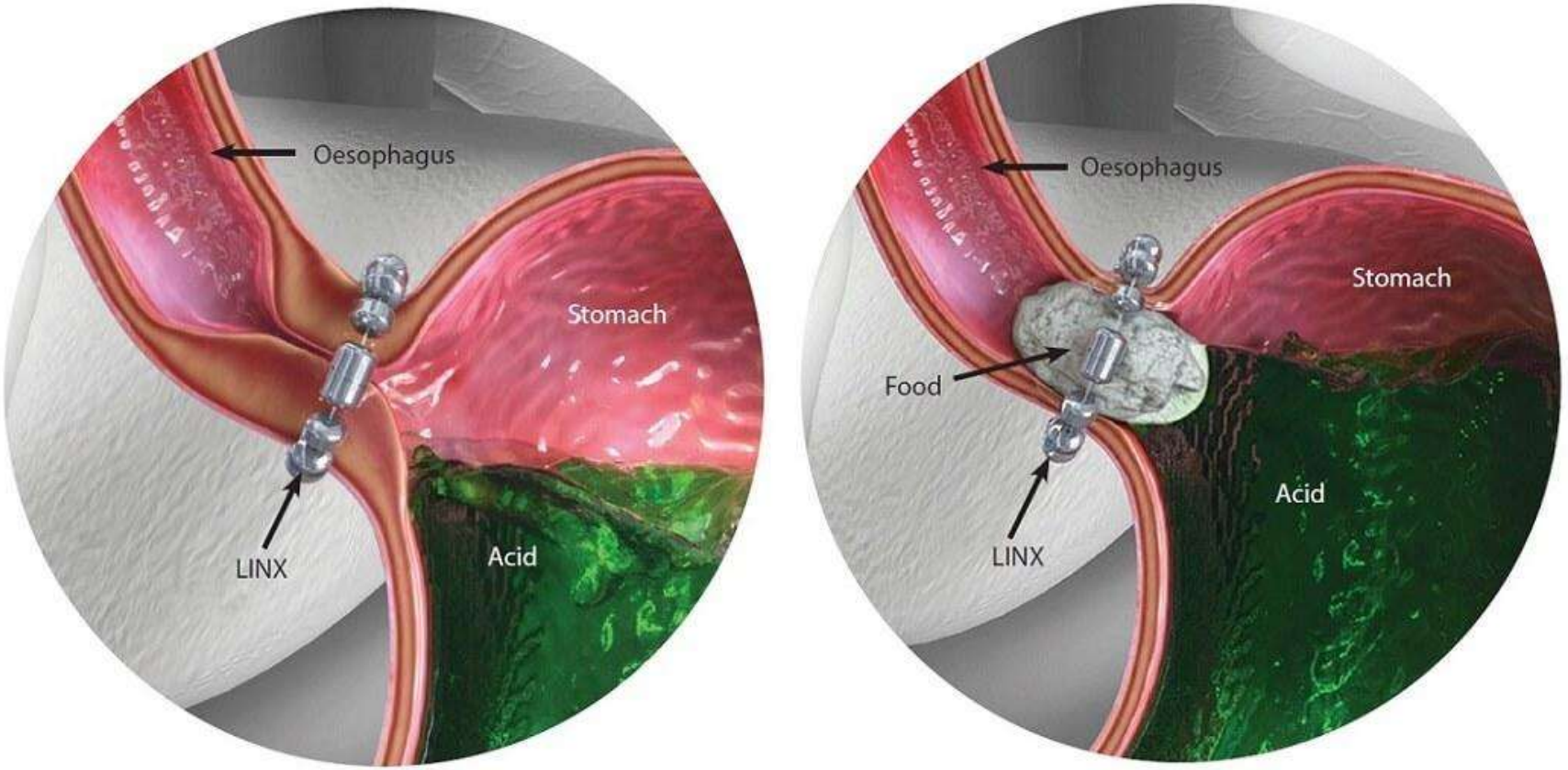
Initial Experience of Endoscopic Radiofrequency Waves Delivery to the Lower Esophageal Sphincter (Stretta Procedure) on Symptomatic Gastroesophageal Reflux Disease Post-Sleeve Gastrectomy

Nesreen Khidir[1] · Luigi Angrisani[2] · Jowhara Al-Qahtani[3] · Sheraz Abayazeed[3] · Moataz Bashah[1,4]

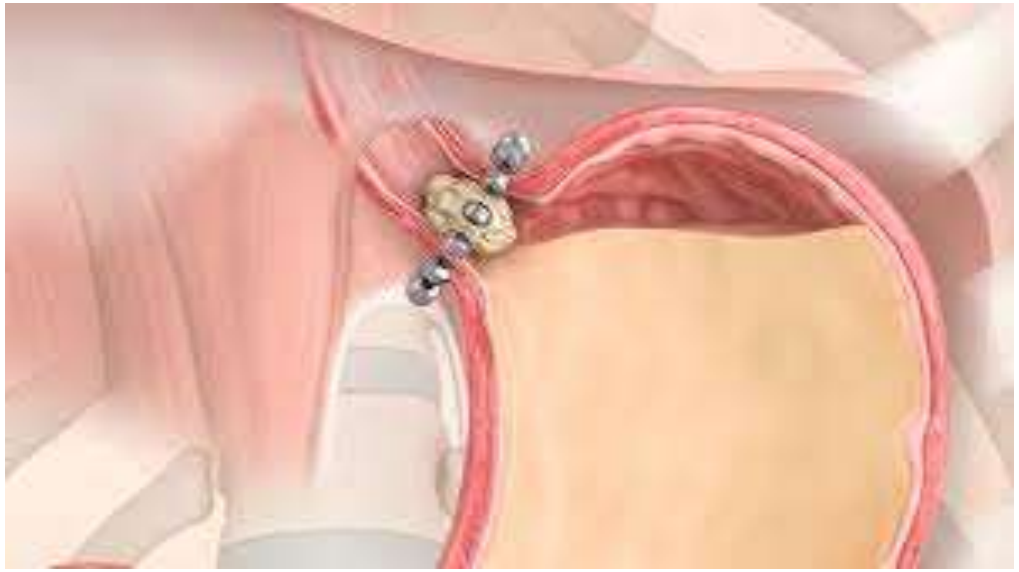
Fifteen patients: (6 months FU)

66.7% of patients were **not** satisfied, the PPI medications decreased in **27%** and ceased in **20%** of patients.
Two patients (13.3%) underwent RYGB at 8 months post-Stretta to relieve symptoms.
The significant complication rate of **6.7%.**

Linx


Oesophagus
Stomach
LINX
Acid
Oesophagus
Stomach
Food
LINX
Acid

Linx



The LINX device uses magnetic titanium beads linked together to form a dynamic ring augmenting the LES barrier function.

Less intraoperative and postoperative morbidity.

Is not licensed for use in severe erosive esophageal disease or large Hiatal hernias.

Linx

Obesity Surgery (2018) 28:3080–3086
https://doi.org/10.1007/s11695-018-3292-y

ORIGINAL CONTRIBUTIONS

Esophageal Magnetic Sphincter Augmentation as a Novel Approach to Post-bariatric Surgery Gastroesophageal Reflux Disease

John P. Kuckelman[1] · Cody J. Phillips[1] · Michael J. Derickson[1] · Byron J. Faler[2] · Matthew J. Martin[1]

28 patients with preoperative testing confirming normal motility and presence of GERD. The post-bariatric PB group (N = 10) (8 SG and 2 RYGB) compared to the standard indications (SI) group. Outcomes were no different with a percent improvement between pre- and post-operative G-QOL survey scores with **70%** improvement for PB and 84% for SI (p = 0.13).

Medication cessation was possible in **90%** for PB versus 94% for SI (p = 0.99). Rates of postoperative dysphagia were similar between the two groups

Linx

Surgical Endoscopy (2020) 34:3211–3215
https://doi.org/10.1007/s00464-019-07096-z

2019 SAGES ORAL

Magnetic sphincter augmentation: a viable rescue therapy for symptomatic reflux following bariatric surgery

Ryan C. Broderick[1] · C. Daniel Smith[2] · Joslin N. Cheverie[1] · Pablo Omelanczuk[3] · Arielle M. Lee[1] · Rebeca Dominguez-Profeta[1] · Robert Cubas[1] · Garth R. Jacobsen[1] · Bryan J. Sandler[1] · Karl-Hermann Fuchs[1] · Santiago Horgan[1]

13 patients underwent LINX placement after bariatric surgery: 8 LSG, 4 LRYGB, and 1 duodenal switch. The average BMI was 30.1.
The average pre-operative DeMeester score was 24.8.

They noted decreased medication usage post-operatively, with 4 patients taking daily PPI, and 9 off medication Completely.

A GERD-HRQL score was obtained pre- and post-operatively in 6 patients with an average reduction from 25 to 8.5 (*p* value 0.002).

Two patients experienced complications requiring endoscopic dilation after LINX placement. **100%** of patients reported overall satisfaction post-procedure.

Linx

J Gastrointest Surg
DOI 10.1007/s11605-015-2887-z

ORIGINAL ARTICLE

Gastroesophageal Reflux Management with the LINX® System for Gastroesophageal Reflux Disease Following Laparoscopic Sleeve Gastrectomy

Kenneth Desart[1] · Georgios Rossidis[1] · Michael Michel[1] · Tamara Lux[1] · Kfir Ben-David[2]

Received: 22 May 2015 / Accepted: 29 June 2015

Seven patients with a history of SG.
All patients were noted to have self-reported greatly improved gastroesophageal reflux symptoms (GERD score questionnaire) 2–4 weeks after their procedure.

They were all noted to have statistically significant improved severity and frequency of their reflux, regurgitation, epigastric pain, sensation of fullness, dysphagia, and cough symptoms in their postoperative GERD symptoms compared with their preoperative evaluation.

Linx

Obesity Surgery (2023) 33:387–396
https://doi.org/10.1007/s11695-022-06381-6

NEW CONCEPT

Feasibility and Efficacy of Magnetic Sphincter Augmentation for the Management of Gastroesophageal Reflux Disease Post-Sleeve Gastrectomy for Obesity

Leena Khaitan[1] · Michael Hill[2] · Michael Michel[3] · Patrick Chiasson[4] · Philip Woodworth[5] · Reginald Bell[5] · Ragui Sadek[6] · Aaron Hoffman[7] · Kari Loing[8] · Paula Veldhuis[8] · William Petraiuolo[8] · Carlos Anciano[9]

30 patients after SG who underwent MSA implantation were followed 12 months post-implant.

No unanticipated adverse device effects were observed.

There were **two adverse events** deemed serious (dysphagia, pain, 6.7%) which resolved without sequelae.

GERD-HRQL scores showed significant improvement **(80.8%,** $P < 0.001$), and a reduction in daily PPI usage was seen **(95.8%,** $P < 0.001$).

44% of patients demonstrated normalization or > = 50% reduction of total distal acid exposure time (baseline 16.2%, 12 months 11%; $P = 0.038$).

Linx

Am J Surg. 2019 Mar;217(3):496-499. doi: 10.1016/j.amjsurg.2018.10.040. Epub 2018 Oct 29.

Laparoscopic placement of the LINX® system in management of severe reflux after sleeve gastrectomy

Abdelkader Hawasli [1], Moutamn Sadoun [2], Ahmed Meguid [2], Mosab Dean [2], Mohamad Sahly [2], Bianca Hawasli [2]

13 patients with a mean BMI of 33 ± 6 kg/m^2. The mean time between SG and placing the LINX® system was 43 ± 19 months.

One patient developed severe dysphagia post-operatively requiring removal of the LINX® after 18 days and one patient was lost to follow up.

The mean follow-up in the remaining 11 patients was 26 ± 12 months.
The mean GERD-HRQL score dropped significantly from 47/75 ± 17/75 to 12/75 ± 14/75 (p = .0003)

OAGB

Journal of Gastrointestinal Surgery (2022) 26:2255–2265
https://doi.org/10.1007/s11605-022-05395-w

ORIGINAL ARTICLE

Comparison of the Long-term Outcomes of RYGB and OAGB as Conversion Procedures After Failed LSG — a Case–Control Study

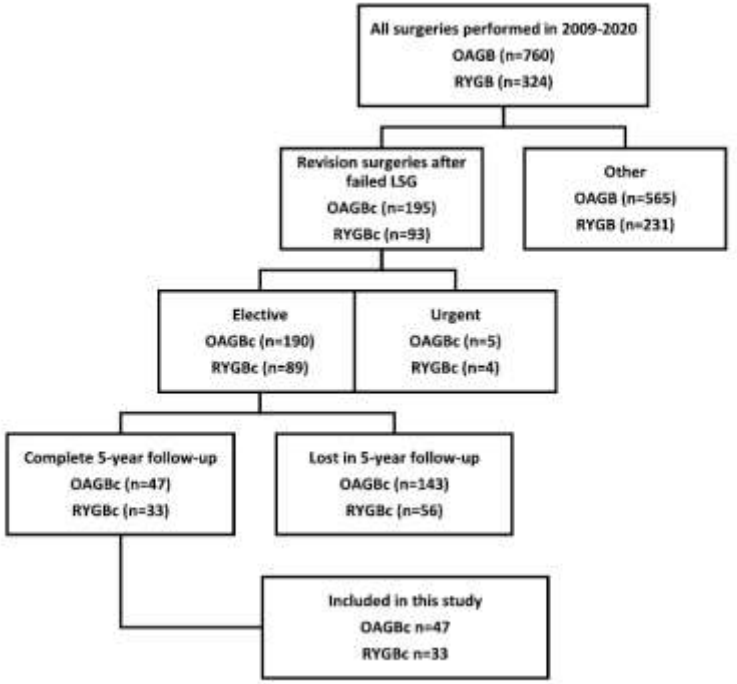
Maciej Wilczyński[1] · Piotr Spychalski[1] · Monika Proczko-Stepaniak[1] · Justyna Bigda[1] · Michał Szymańs
Małgorzata Dobrzycka[1] · Olga Rostkowska[1] · Łukasz Kaska[1]

Received: 22 February 2022 / Accepted: 13 June 2022 / Published online: 5 July 2022

Table 1 Demographic characteristics before conversion. OAGBc – one anastomosis gastric bypass conversion. RYGBc – Roux-en-Y gastric bypass conversion. BMI – body mass index. WBC – white blood count. DM2 – diabetes mellitus type 2. HT – hypertension. OSAS – obstructive sleep apnea syndrome. DL – dyslipidemia. GERD – gastroesophageal reflux disease

	RYGBc ($n=33$)	OAGBc ($n=47$)	p value
Age (mean ± SD)	41.24 ± 8.906	45.02 ± 10.71	0.100
Sex (F/M)	27 / 6	34 / 13	
Weight ± SD (kg)	105.52 ± 18.1	115.17 ± 20.81	0.036
BMI ± SD (kg/m^2)	38.70 ± 6.84	40.44 ± 5.8	0.228
Albumin ± IQR (mg/dl)	38 ± 3	39.79 ± 3	0.146
Creatinine ± IQR (mg/dl)	0.75 ± 0.1	0.8 ± 0.15	0.033
Hemoglobin ± SD (g/dl)	13.5 ± 1.22	14.37 ± 1.3	0.012
WBC ± SD (10'3/ul)	7.331 ± 1.77	7.52 ± 1.53	0.658
DM2 n (%)	6 (18%)	12 (25.5%)	0.438
HT n (%)	10 (30%)	22 (47%)	0.138
OSAS n (%)	1 (3%)	5 (11%)	0.203
DL n (%)	6 (18%)	22 (47%)	0.008
GERD n (%)	10 (30%)	7 (15%)	0.097
Conversion reason			
Unsatisfactory weight loss	20 (60.6%)	44 (93.6%)	
Weight regain	5 (15.2%)	2 (4.3%)	
Symptomatic reflux	8 (24.2%)	1 (2.1%)	

The remission rate of GERD:
between RYGB:40% and OAGB: 71.4% ($p > 0.99$).



OAGB

Obesity Surgery (2019) 29:819–827
https://doi.org/10.1007/s11695-018-03629-y

ORIGINAL CONTRIBUTION

Mini/One Anastomosis Gastric Bypass Versus Roux-en-Y Gastric Bypass as a Second Step Procedure After Sleeve Gastrectomy—a Retrospective Cohort Study

Sonja Chiappetta[1] · Christine Stier[2] · Oliver Scheffel[1] · Simone Squillante[3] · Rudolf A. Weiner[1]

	$n = 55$	RYGB ($n = 21$)	OAGB-MGB ($n = 34$)	p value
Age (years)	46.5 ± 11.1 (22–68)	46.14 ± 10.8 (22–61)	46.76 ± 11.48 (25–68)	$p = 0.84$
BMI before SG (kg/m^2)	53.4 ± 9.5 (36.3–72.6)	49.8 ± 9.3 (36.3–68.6)	56.5 ± 8.8 (38.4–72.6)	$p = 0.0097$
BMI at conversion (kg/m^2)	42.2 ± 8.7 (22.3–62.7)	36.6 ± 6.9 (22.2–51.9)	45.7 ± 8 (30.1–62.9)	$p = 0.0001$
BMI drop at 12 months (kg/m^2)		3.6 ± 3.3 (−3.3–9.3)	9.7 ± 5.8 (1.9–23.3)	$p = 0.0001$

Intractable GERD (n = 18, 33%); 13/18 patients underwent RYGB and 5/18 underwent OAGB-MGB, while in these 5 patients, BMI was ≥ 50 kg/m2). Due to a giant hiatal hernia, additional hiatoplasty was performed in eight patients during RYGB and in four during OAGB-MGB.

At the 1-year FU, **4.8%** of the RYGB and **11.8%** of the OAGB-MGB patients had still reflux symptoms, but a statistically significant reduction of GERD symptoms was seen after RYGB.

OAGB

Obesity Surgery (2022) 32:643–651
https://doi.org/10.1007/s11695-021-05866-0

ORIGINAL CONTRIBUTIONS

Outcome of Sleeve Gastrectomy Converted to Roux-en-Y Gastric Bypass and One-Anastomosis Gastric Bypass

D. M. Felsenreich[1] · K. Steinlechner[1] · F. B. Langer[1] · N. Vock[1] · J. Eichelter[1] · C. Bichler[1] · J. Jedamzik[1] · M. Mairinger[1] · I. Kristo[1] · G. Prager[1,2]

29.9% of patients (n = 13/45) had still GERD symptoms after RYGB and **53.8%** (n = 7/13) after OAGB

OAGB

Obesity Surgery (2023) 33:2125–2131
https://doi.org/10.1007/s11695-023-06636-w

ORIGINAL CONTRIBUTIONS

The Effect of Revisional One Anastomosis Gastric Bypass After Sleeve Gastrectomy on Gastroesophageal Reflux Disease, Compared with Revisional Roux-en-Y Gastric Bypass: Symptoms and Quality of Life Outcomes

Danit Dayan[1,2] · Fahim Kanani[1] · Anat Bendayan[1] · Eran Nizri[1] · Guy Lahat[1,2] · Adam Abu-Abeid[1,2]

Table 1 Demographic and clinical characteristics of patients with post-SG GERD undergoing OAGB and RYGB

	OAGB (n=31)	RYGB (n=47)	p value
Age (years)	43.8 ± 11.5	50.3 ± 13.4	0.03
Males (n, %)	8 (25.8%)	9 (19.1%)	0.26
BMI before SG (kg/m^2)	45.9 ± 8.4	42.9 ± 7.2	0.14
BMI at date of surgery (kg/m^2)	39.9 ± 8.8	30.6 ± 6	<0.001

	OAGB (n=31)	RYGB (n=47)	p value
Follow-up time (months)	36 ± 16.4	28.8 ± 17.1	0.08
BMI at last follow-up (kg/m^2)	33 ± 7.6	29 ± 4.6	0.003
Total weight loss (%)	22 ± 12.9	4.4 ± 14.6	<0.001
GERD resolution (n, %)	24 (77.4%)	43 (91.5%)	0.03
PPI cessation (n, %)	24 (77.4%)	43 (91.5%)	0.03
GERD-HRQL preoperative score**	9.6 ± 7.2	13.1 ± 8	0.06
GERD-HRQL follow-up score**	1.7 ± 4.5	1.7 ± 2.7	0.94

OAGB

World J Surg (2022) 46:855–864
https://doi.org/10.1007/s00268-021-06424-6

ORIGINAL SCIENTIFIC REPORT

Roux-en-Y Versus One Anastomosis Gastric Bypass as Redo-Operations Following Sleeve Gastrectomy: A Retrospective Study

Karl Peter Rheinwalt[1] · Sandra Schipper[2,3] · Andreas Plamper[1] · Patrick Hamid Alizai[2] · Jonel Trebicka[4] · Maximilian Joseph Brol[4] · Andreas Kroh[2] · Sophia Schmitz[2] · Chetan Parmar[5] · Ulf Peter Neumann[2] · Tom Florian Ulmer[2]

Anti-reflux effectiveness of RYGB (56 remissions out of 63) and OAGB (39 out of 45) (89% and 87%), was almost **identical** ($p = 0.475$), 12 months after Redo-surgeries.

Summary

Stretta, Linx, and OAGB can play a significant role in the management of post-sleeve GERD in selected cases

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THANK YOU