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Long-term Results after Laparoscopic Sleeve Gastrectomy - More than 10 Years Follow-up in a Single Tertiary Center

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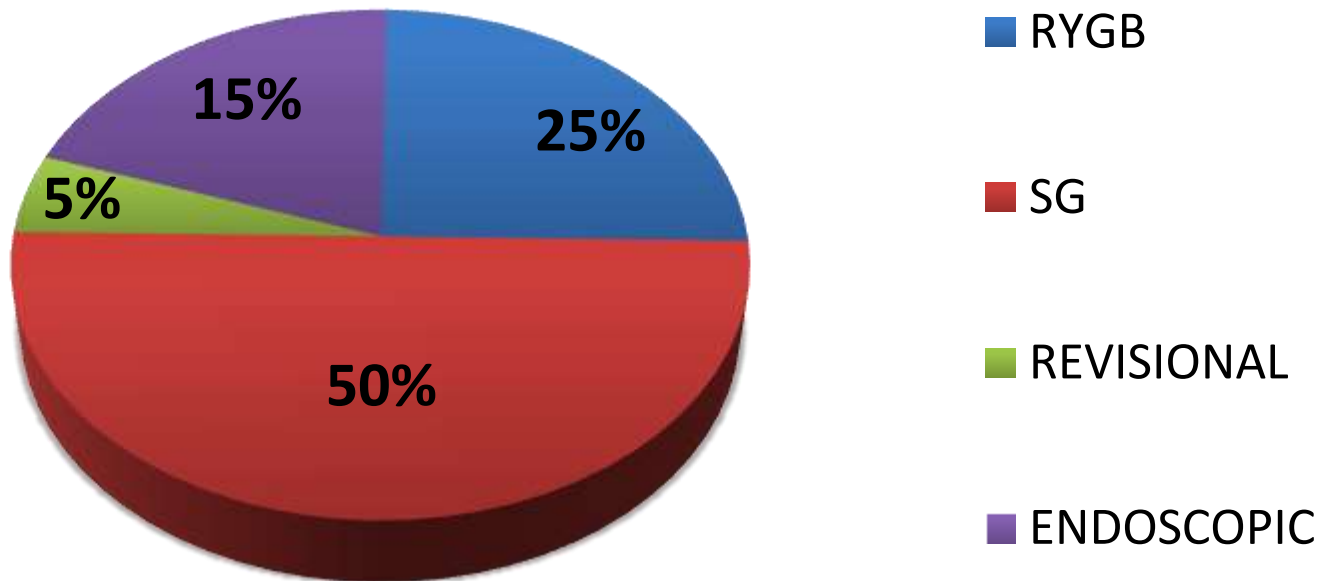


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Conflict of Interest Disclosure

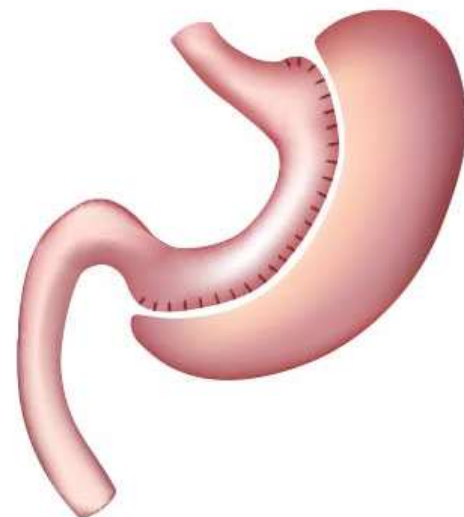
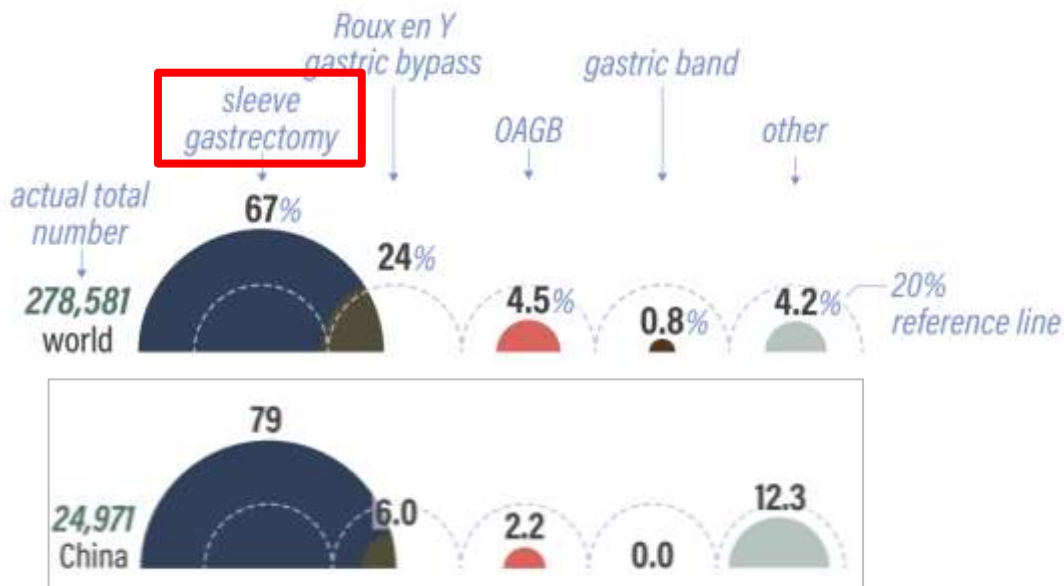
- Funding: None
- Relationship with Industry: None

Case Mix Disclosure



IFSO Registry 2022

Primary procedures by type
World total of primary procedures



Laparoscopic Sleeve Gastrectomy (LSG)



Safety

peri-op morbidity 5-7%,
mortality 0.05%



Reproducible

30 cases to achieve competency



Efficacy

53%EWL at 5 years



Durability

10 years or more



Long-Term Outcomes After Bariatric Surgery: a Systematic Review and Meta-analysis of Weight Loss at 10 or More Years for All Bariatric Procedures and a Single-Centre Review of 20-Year Outcomes After Adjustable Gastric Banding

Paul E. O'Brien^{1,2} · Annemarie Hindle³ · Leah Brennan³ · Stewart Skinner^{1,2} · Paul Burton^{1,2} · Andrew Smith² · Gary Crosthwaite² · Wendy Brown^{1,2}

- Only 2 studies with 10+ years of FU



Reference	Procedure type	Initial #	Follow-up %	Duration of FU	# pts at max. years	%EWL at max. years	Reoperation %
Arman, 2016 [54]	Sleeve	110	59	11	47	62	32
Felslenreich, 2016 [55]	Sleeve	53	60	10	32	53	36

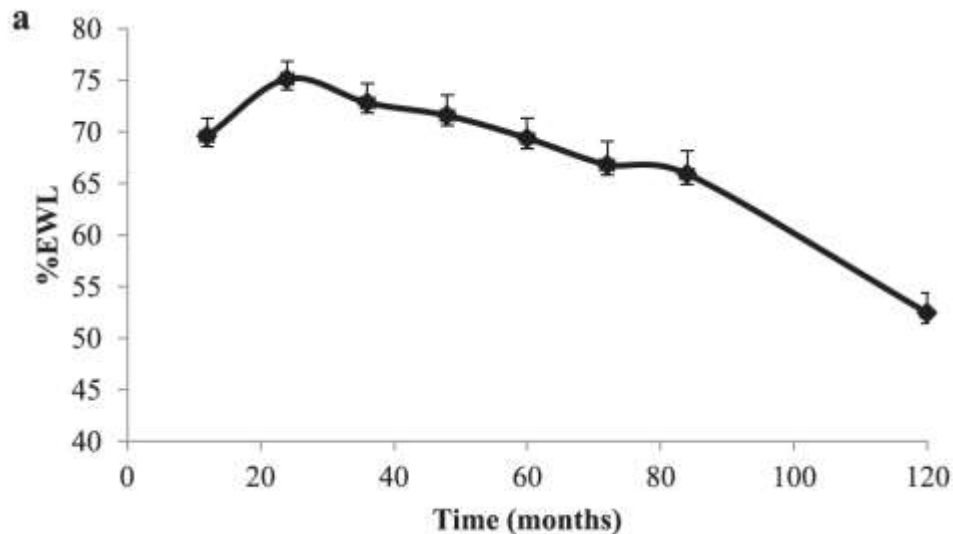
10-year follow-up after laparoscopic sleeve gastrectomy: Outcomes in a monocentric series

Lidia Castagneto Gissey, M.D.^a, James R. Casella Mariolo, M.D.^b, Alfredo Genco, M.D.^a,
Alfonso Troisi, M.D.^b, Nicola Basso, M.D.^a, Giovanni Casella, M.D., Ph.D.^{a,*}

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Effect of Laparoscopic Sleeve Gastrectomy vs Roux-en-Y Gastric Bypass on Weight Loss, Comorbidities, and Reflux at 10 Years in Adult Patients With Obesity The SLEEVEPASS Randomized Clinical Trial



Paulina Salminen, MD, PhD; Sofia Grönroos, MD; Mika Helmiö, MD, PhD; Saija Hurme, MSc;
Anne Juuti, MD, PhD; Risto Juusela, MD; Pipsa Peromaa-Haavisto, MD, PhD; Marja Leivonen, MD, PhD;
Pirjo Nuutila, MD, PhD; Jari Ovaska, MD, PhD

LSG (n= 121)

- Median %EWL = 43.5%
- Postop esophagitis = 31%
- T2DM remission rate = 26%
- OSA remission rate = 16%
- HT remission rate = 8%



Ten-Year Results of Laparoscopic Sleeve Gastrectomy: a Retrospectively Designed Study of a Single Tertiary Center

Reut Avidan¹  · Adam Abu-Abeid^{1,2} · Andrei Keidar^{1,2} · Guy Lahat^{1,2} · Shai Meron Eldar^{1,2}



Israel center

- 80 patients

- Mean %EWL = 42.7%
- De-novo GERD 40%
- 33.8% patients underwent at least one surgical procedure

Conclusion: SG shows high long-term failure rates. One of every three patients will undergo another surgical procedure within a 10-year period.



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Study Objective

- To evaluate the long-term weight loss, co-morbidity outcomes, nutritional status, and complication rates after LSG in patients with a follow-up period of at least 10 years

Methods

Retrospective analysis of Prospective Collected Database



Multidisciplinary Bariatric & Metabolic Surgery Clinic
Time: 05/2006 – 12/2012



Eligible obese patients undergoing bariatric surgery



Inclusion criteria

1. LSG

Exclusion criteria

1. Revisional bariatric surgery
2. Prader-Willi Syndrome Patients



Data Collected

1. Weight loss
2. Comorbidities
3. Complications – conversion rate, GERD
4. Blood results

Follow-up

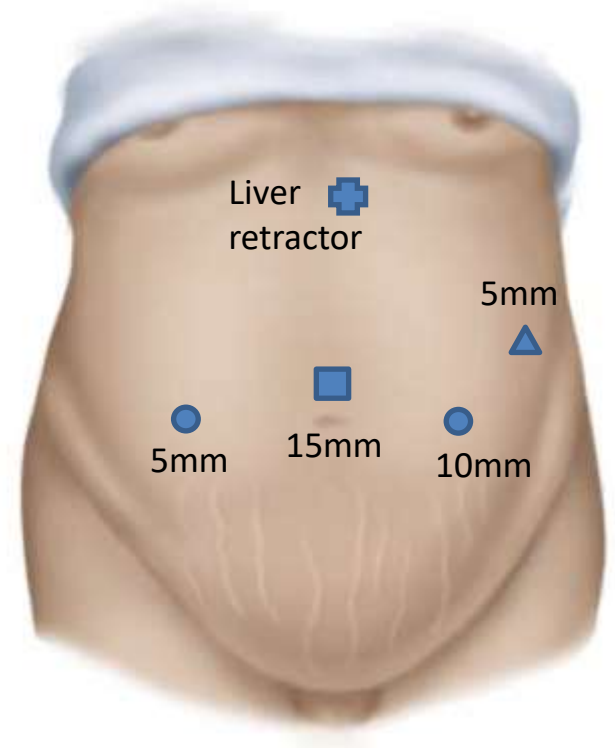
1y: 1m, 3m, 6m, 1y

2-3y: every 6m

Thereafter: yearly

Surgical Technique

- 5 ports
- 38Fr bougie
- 50cc antral balloon
- Invagination of proximal staple line “dog-ear”
- Routine staple line oversewing
- Anti-torsion stitch



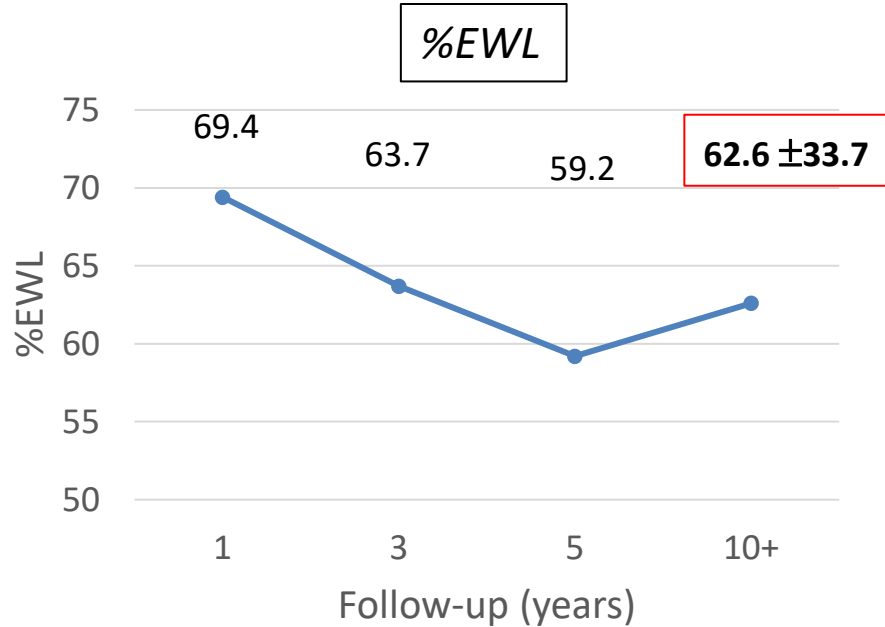
Results

- Total 110 LSG performed
- 2 PWS patients were excluded
- Patient retention rate 77% (n=83)
- Mean FU 12 \pm 2 years

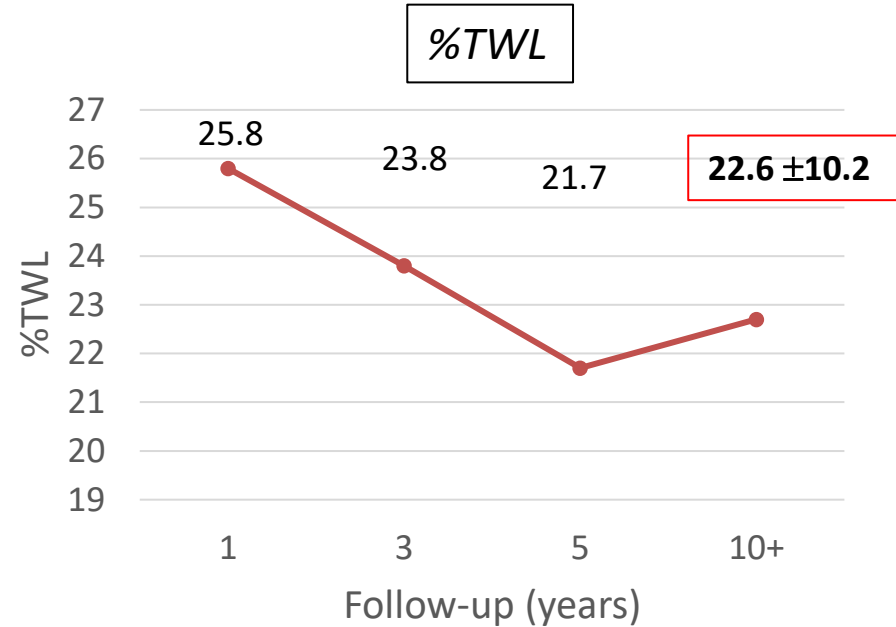
Baseline Characteristics	LSG (n=108)
Female gender	59 (55.6%)
Age (years)	40 \pm 10
Chinese	101 (91.8%)
Initial BMI (kg/m ²)	42.0 \pm 6.4
Diabetics	51 (46.4%)
Hypertension	48 (43.6%)
OSA	41 (37.2%)
Preoperative GERD	3 (2.7%)

Weight Loss

%EWL in BMI <40: 73.5 ± 37.9



—●— LSG



—●— LSG

Weight Loss at 10+ years

	Definition	% (n)
Success	EWL >50%	51.8% (43/83)
Non-response	EWL <25% (non-response)	2.4% (2)
Weight recurrence	EWL >25% from nadir	25% (27)

**Low Acceptance rate of Revisional Surgery for
Insufficient weight loss/ weight regain
(Only 7 patients received revisional surgery !!)**

Comorbidities at 10+ years

	Baseline (n)	Remission (n)	Improvement (n)	Unchanged (n)	Recurrence (n)
Type 2 DM	31	58.1% (18)		6.5% (2)	35.5% (11)
Sleep apnea	32	93.8% (30)		0% (0)	6.5% (2)
Hypertension	33	15.2% (5)	24.2% (8)	45.5% (15)	15.2% (5)
Dyslipidemia	10	10% (1)	20% (2)	60% (6)	10% (1)

Early Complications (< 30d)

	% (n)	Reasons
Morbidity	2.8% (3)	- 1 leak
- Readmission	0	- 1 sleeve stricture
- Reoperation	0	- 1 wound infection
Mortality	0	



Late Complications (> 30d)

	% (n)	Reasons
Reoperation <ul style="list-style-type: none"> • Weight regain • Intractable GERD • Sleeve stricture • Insufficient weight loss 	13.0% (14/108) 4.6% (5) 4.6% (5) 1.8% (2) 1.8% (2)	
De novo GERD <ul style="list-style-type: none"> • Regular PPI 	61.9% (39/63) 87.2% (34)	
Mortality	2 (1.8%)	<ul style="list-style-type: none"> - 1 died of HCC at 4y - 1 died of stroke at 7y

Vitamin & Micronutrients at 10+ years

	% (n)
Patient requiring supplements	17.9% (12/67)
Vitamin D deficiency	14.1% (9)
Iron deficiency	10.9% (7)

VS



EAST



WEST

Comparisons

	Country	Number of Patients	Mean EWL (SD)	T2DM Remission	OSA Remission	HT Remission	De-novo GERD	Revisional Surgery
Our study	Hong Kong, China	83	62.6% (33.7)	38.7%	81.3%	15.2%	61.9%	13.0%
Felsenreich, 2016	Austria	53	53.5% (26.6)	1.9%	N/A	23.5%	N/A	36%
Arman, 2016	Belgium	65	67.4%	N/A	N/A	28.6%	21.4%	31.7%
Gissey, 2018	Italy	114	52.5% (21.1)	64.7%	72.2%	44.2%	42.9%	44%
Kraljevic, 2021	Switzerland	215	53.6% (24.6)	61%	46%	60.5%	32.4%	19.2%
Slaminen, 2022	Finland	121	43.5%	26%	16%	8%	31%	15.7%
Avidan, 2023	Israel	80	42.7% (36.0)	47%	N/A	43.7%	40%	33.8%

Conclusion

- LSG is an effective and durable stand-alone bariatric procedure for Asian
- High incidence of de novo GERD after LSG
- Further research:
 - Measures to reduce de novo GERD after LSG
 - Identify factors of non-response to LSG
 - Methods to enhance weight loss or revisional procedures with lower risk





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