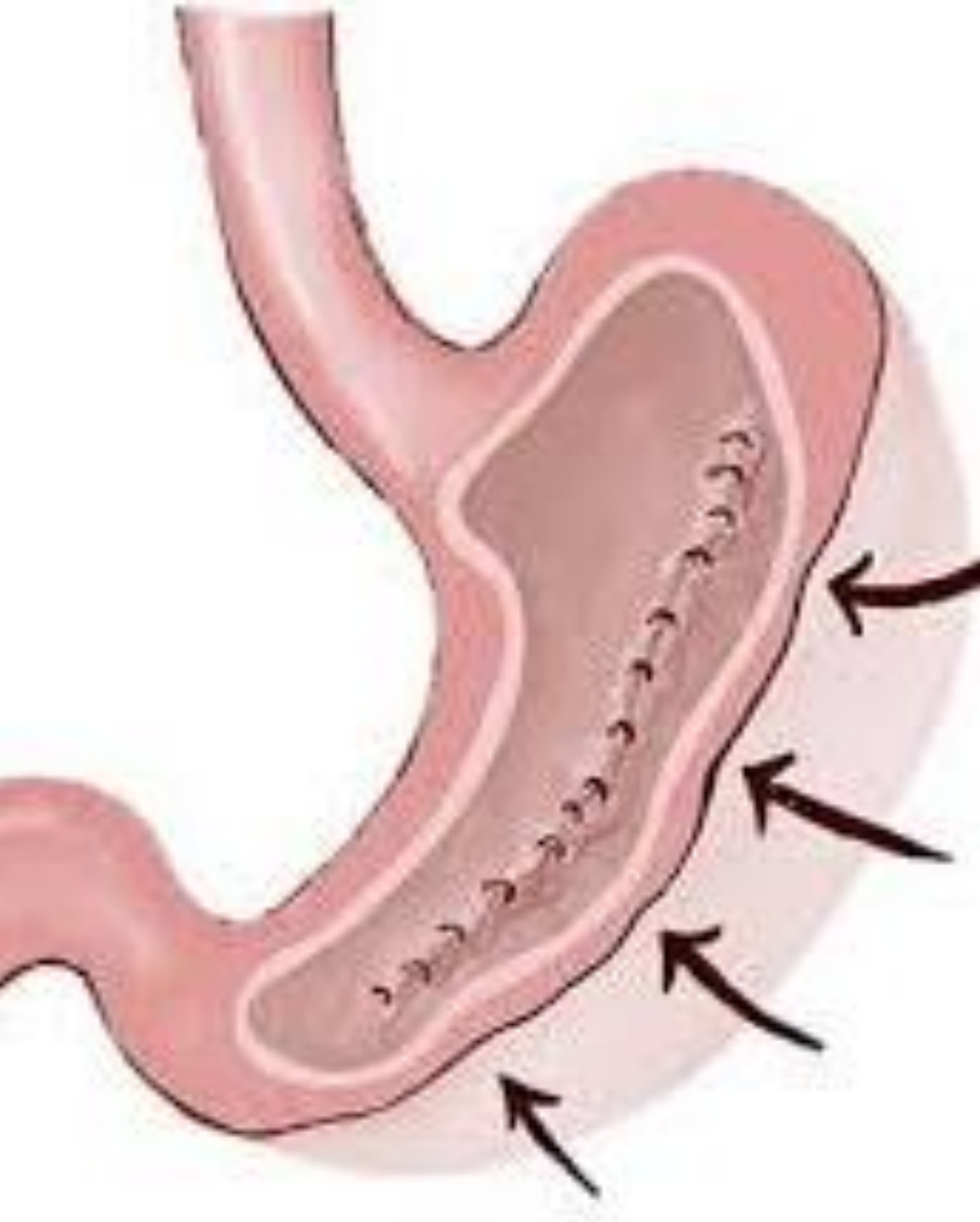
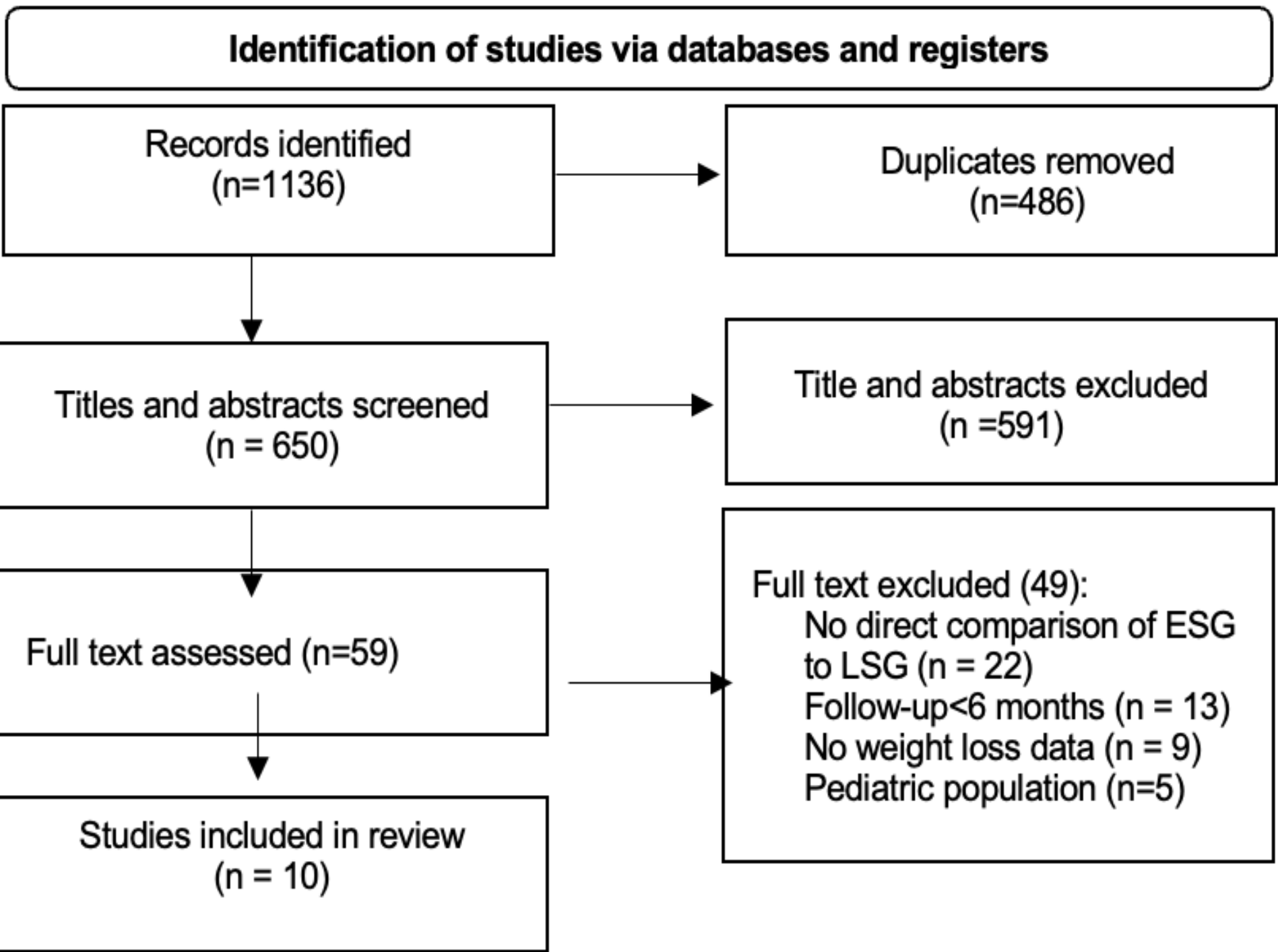


INTRODUCTION & OBJECTIVES

- Laparoscopic sleeve gastrectomy (LSG) is the most common bariatric operation worldwide, with the endoscopic sleeve gastroplasty (ESG) emerging as a non-surgical bariatric procedure with comparable outcomes to LSG.¹
- Long-term comparative data of ESG to LSG is limited**^{1,2}
- Objective: **compare the long-term efficacy and adverse outcomes** including rates of de novo gastro-esophageal reflux disease (GERD) of **ESG to LSG**.

METHODS

- Systematic review and meta-analysis according to PRISMA guidelines
- Comprehensive search of 5 databases
- Studies comparing outcomes and/or adverse events following primary ESG or LSG with a sample size >5 were included
- Meta-analysis using random effects model with restricted maximum likelihood performed to compare %TBWL at 6, 12, and 24 months, adverse events and incidence of de-novo GERD in ESG vs LSG



Endoscopic sleeve gastroplasty illustration. Source: MD Bariatrics, Maryland bariatrics

RESULTS

10 studies were included, **comprising 7442 patients, of whom 3583 (48%) underwent ESG and 3859 (52%) underwent LSG**. Mean age was 35.5 years and mean initial BMI was 34.6 kg/m². Most patients were female (86.2%) and mean follow-up was 32.1 months.

ESG was associated with lower total body weight loss (TBWL%) at 6 months (9 studies, mean diff. -8.34%, 95%CI, -10.50 to -6.19), **12 months** (6 studies, mean diff. -12.58%, 95%CI -15.47 to -9.70) **and 24 months** (3 studies, mean diff. -9.81%, 95%CI -14.72 to -4.90)

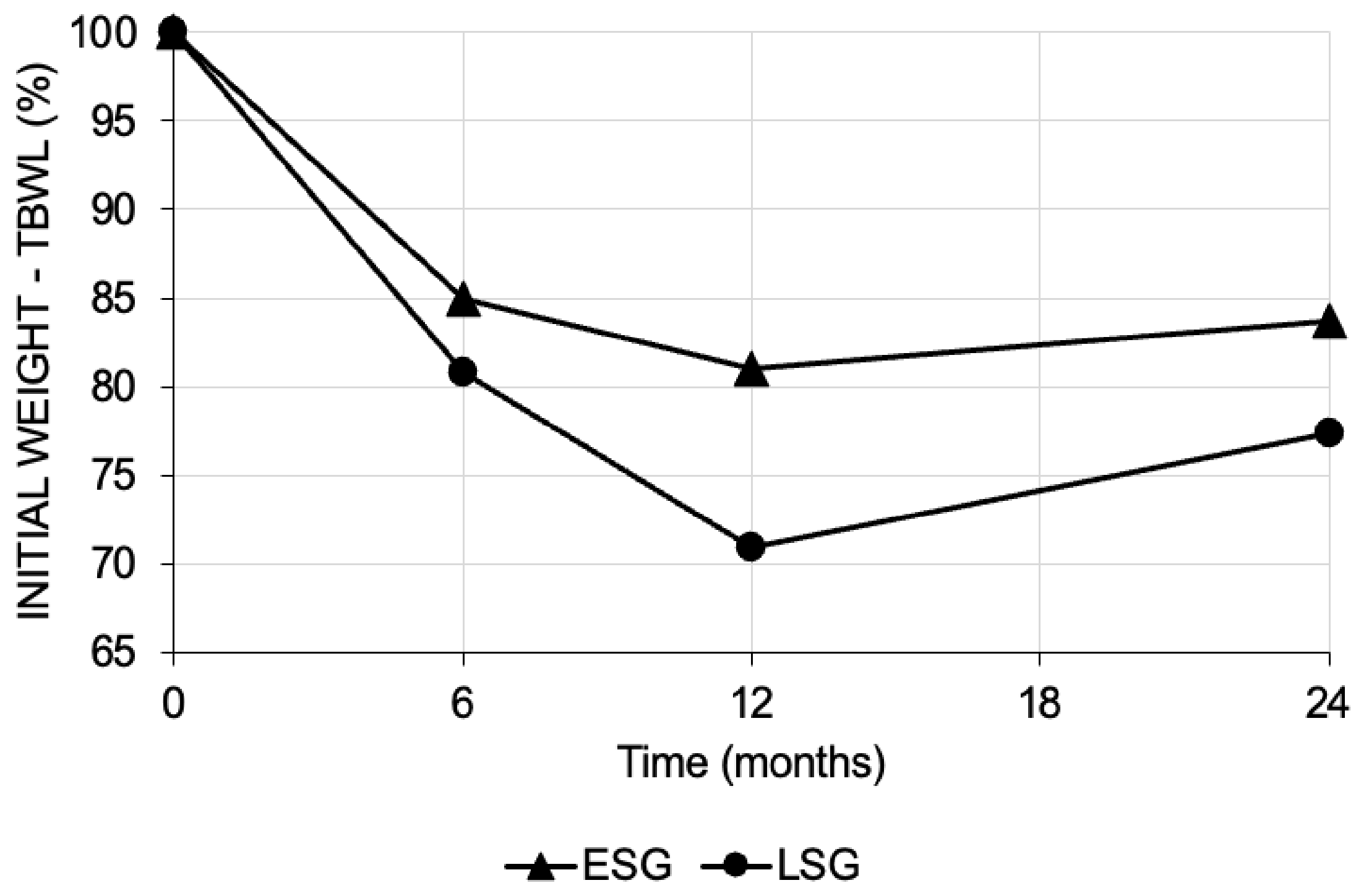


Figure 2. Comparison of total body weight loss (%TWBL) over time in endoscopic sleeve gastroplasty (ESG) and laparoscopic sleeve gastrectomy (LSG).

Study	ESG		LSG		Risk ratio with 95% CI	Weight (%)
	Adverse events	None	Adverse events	None		
Fayad 2019	3	51	14	69	0.33 [0.10, 1.09]	14.12
Lopez-Nava 2021	1	198	3	58	0.10 [0.01, 0.96]	5.58
Carr 2022	4	12	12	33	0.94 [0.35, 2.49]	17.75
Joseph 2024	1	67	8	204	0.39 [0.05, 3.06]	6.44
Fiorillo 2020	0	23	2	21	0.20 [0.01, 3.95]	3.39
Dankar 2025	6	64	12	58	0.50 [0.20, 1.26]	18.80
Novikov 2018	2	89	11	109	0.24 [0.05, 1.06]	10.68
Alqahtani 2022	14	3,004	10	3,008	1.40 [0.62, 3.15]	21.12
Lopez-Nava 2020	0	12	0	12	1.00 [0.02, 46.70]	2.12
Overall					0.54 [0.30, 0.96]	

Study	ESG		LSG		Risk ratio with 95% CI	Weight (%)
	De-Novo GERD	No GERD	De-Novo GERD	No GERD		
Fayad 2019	1	53	12	71	0.13 [0.02, 0.96]	15.18
Carr 2022	0	16	0	45	2.71 [0.06, 131.06]	5.11
Fiorillo 2020	0	23	7	16	0.07 [0.00, 1.10]	9.00
Dankar 2025	3	67	14	56	0.21 [0.06, 0.71]	28.41
Spry 2023	7	25	71	144	0.66 [0.33, 1.31]	42.31
Overall					0.33 [0.13, 0.82]	

Figure 3. Risk ratio comparison of (Top) adverse events and (Bottom) de novo gastroesophageal reflux disease (GERD) between endoscopic sleeve gastroplasty (ESG) and laparoscopic sleeve gastrectomy (LSG).

CONCLUSIONS

- LSG provides greater weight loss compared with ESG** up to 24 months of follow-up, **but at the expense of higher adverse event rates** and greater risk of de-novo GERD.
- ESG** may be an attractive option for patients seeking a less invasive intervention with moderate weight loss and a faster recovery.
- LSG** may be better suited for selected patients without significant GERD who prioritize maximal weight reduction.
- Further long-term, prospective and comparative studies are needed.**

REFERENCES

- Yoon JY, Arau RT. The efficacy and safety of endoscopic sleeve gastroplasty as an alternative to laparoscopic sleeve gastrectomy. Vol. 54, Clinical Endoscopy. Korean Society of Gastrointestinal Endoscopy; 2021. p. 17–24.
- Beran A, Matar R, Jaruvongvanich V, Rapaka BB, Alalwan A, Portela R, et al. Comparative Effectiveness and Safety Between Endoscopic Sleeve Gastroplasty and Laparoscopic Sleeve Gastrectomy: a Meta-analysis of 6775 Individuals with Obesity. Obes Surg. 2022 Nov 1;32(11):3504–12.

CONTACT INFORMATION

Brianna Brand – babrand@ualberta.ca