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Efficacy of Sleeve Gastrectomy with Concomitant Hiatal Hernia Repair versus Sleeve-Fundoplication on Gastroesophageal Reflux Disease Resolution: Systematic Review and Meta-Analysis

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INTRODUCTION

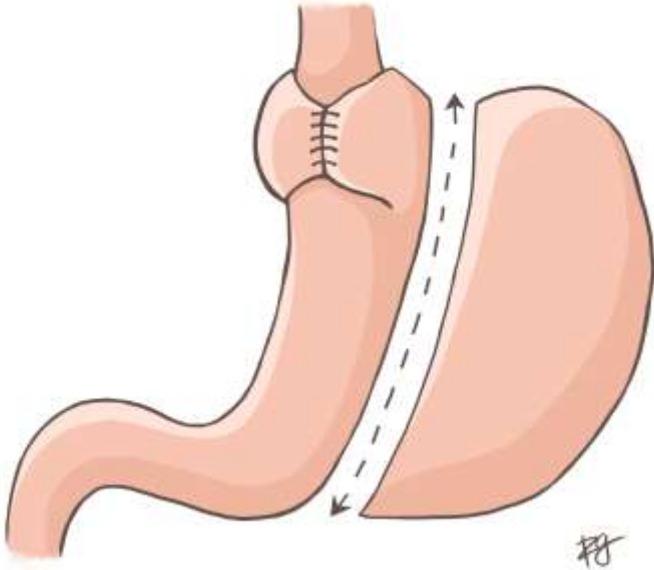
- The need for adding anti-reflux mechanisms when performing SG in patients affected by obesity with concomitant GERD and/or hiatal hernia is still a controversial subject
- GERD incidence after SG has been reported by numerous authors at extremely variable rates.
- The worsening or de novo onset of postoperative GERD may be caused by a number of reasons



INTRODUCTION



VS



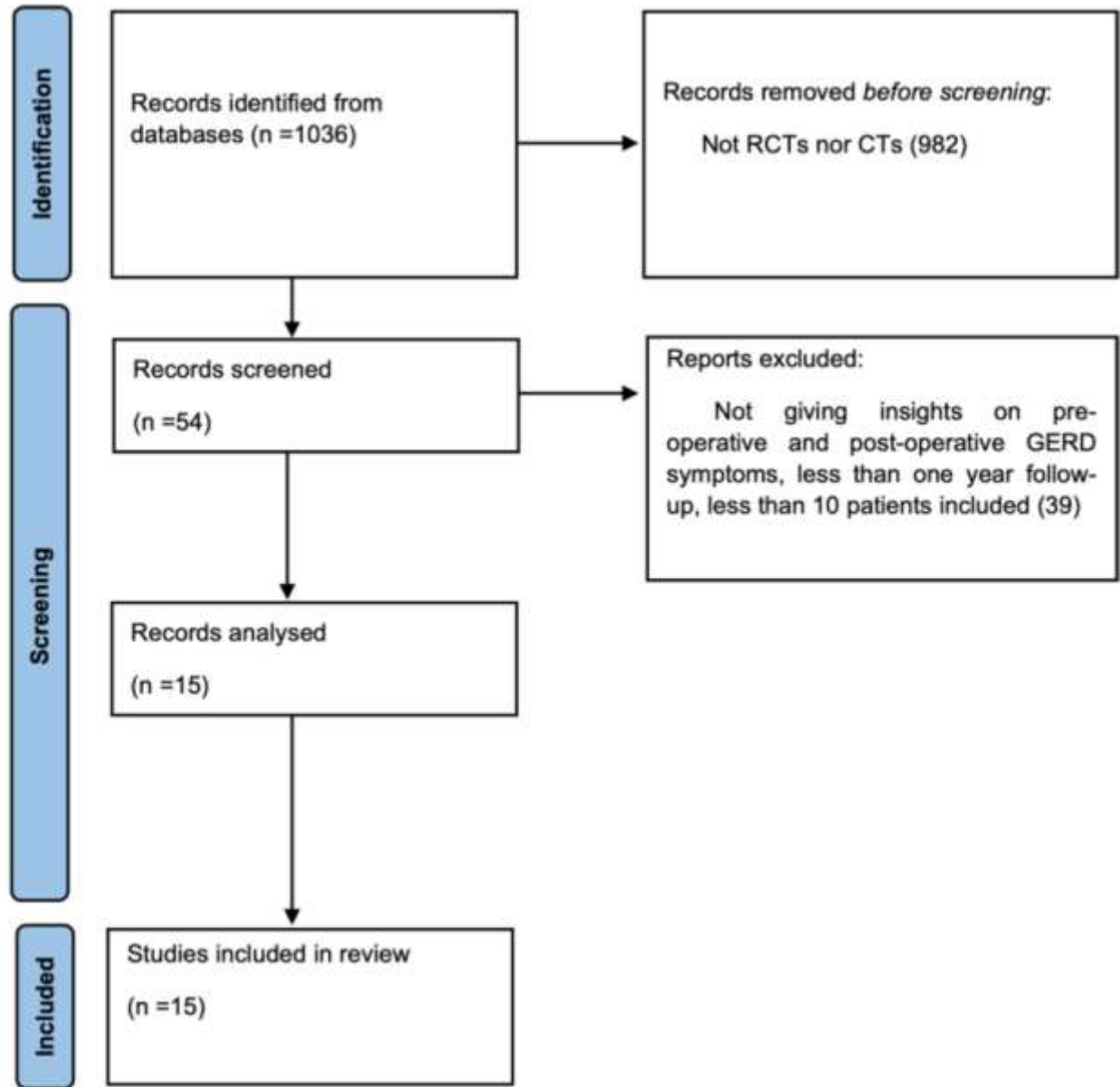
SG + HHR (w/ or w/out mesh)

SG + HHR + FP

MATERIALS AND METHODS

1164 PTS with GERD

- 554 SG+ HHR
- 610 SG+ FP



OUTCOME MEASURES

Rate of postoperative GERD symptoms assessed with questionnaire

12-month weight loss.

PRIMARY

SECONDARY



Postoperative complications

Mortality

CHARACTERISTICS OF STUDIES ASSESSING SG + HHR

Authors	Year of Publication	Study Type	Control Group	Number of Patients	Follow-Up (Months)	Surgical Technique	Quality Assessment
Soricelli et al. [9]	2013	Prospective	No	97	18	Posterior repair using non-absorbable sutures	9
Santonicola et al. [10]	2014	Retrospective	Group A (SG + HHR) vs. Group B (SG alone)	78 vs. 102	14.6	Posterior repair using 0-Ethibond	9
Elwan et al. [11]	2016	Retrospective	Group A (SG + HHR) vs. Group B (SG + FP)	20 vs. 20	14.1	Posterior repair using 2-0 non-absorbable sutures	8
Aridi et al. [12]	2017	Retrospective	Group A (SG + HHR) vs. Group B (SG alone)	76 vs. 89	12	Posterior repair using 2-0 Ethibond sutures	8
Attia et al. [13]	2017	Prospective	No	53	18	Posterior repair using 0-Ethibond	8
Balla et al. [14]	2017	Retrospective	Group A (SG + simple HHR) vs. Group B (SG + mesh HHR)	12 vs. 17	33.2 ± 16.3	Posterior repair using 2-0 non-absorbable sutures vs. cruroplasty using absorbable synthetic mesh	7
Gero et al. [15]	2017	Retrospective	No	14	12.5	Posterior closure with EGJ fixed to the median arcuate ligament using 0-non-absorbable sutures	8
Angrisani et al. [16]	2020	Retrospective	No	91	94 ± 10	Posterior repair using 2-0 non-absorbable sutures	8
Boru et al. [17]	2020	Prospective	Group A (SG + simple HHR) vs. Group B (SG + mesh HHR)	48 vs. 48	59.1 ± 9.1	Posterior repair using non-absorbable sutures vs. cruroplasty using biologic mesh	7

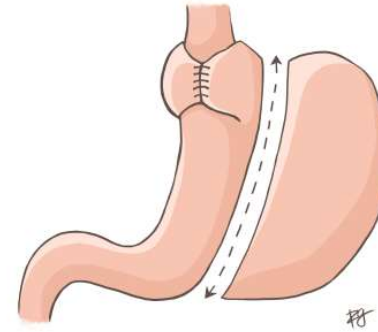
CHARACTERISTICS OF STUDIES ASSESSING SG + FP

Authors	Year of Publication	Study Type	Control Group	Number of Patients	Follow-Up (Months)	Surgical Technique	Quality Assessment
da Silva et al. [18]	2015	Retrospective	No	122	36	Sleeve Collis-Nissen Hiato-plasty	7
Elwan et al. [11]	2016	Retrospective	Group A (SG + HHR) vs. Group B (SG + FP)	20 vs. 20	14.1	Nissen sleeve	8
Nocca et al. [19]	2016	Prospective	No	25	12	Nissen sleeve	8
Lasnibat et al. [20]	2017	Retrospective	Group A (SG + FP) vs. Group B (SG alone)	15 vs. 23	12	Nissen sleeve	7
Amor et al. [21]	2020	Prospective	No	70	12	Nissen sleeve	8
Olmi et al. [22]	2020	Retrospective	No	220	24	Sleeve Rossetti fundoplication	9
Olmi et al. [23]	2022	RCT	Group A (SG alone) vs. Group B (SG + FP)	140 vs. 138	12	Sleeve Rossetti fundoplication	5

PRIMARY END POINT: Rate of postoperative GERD SYMPTOMS

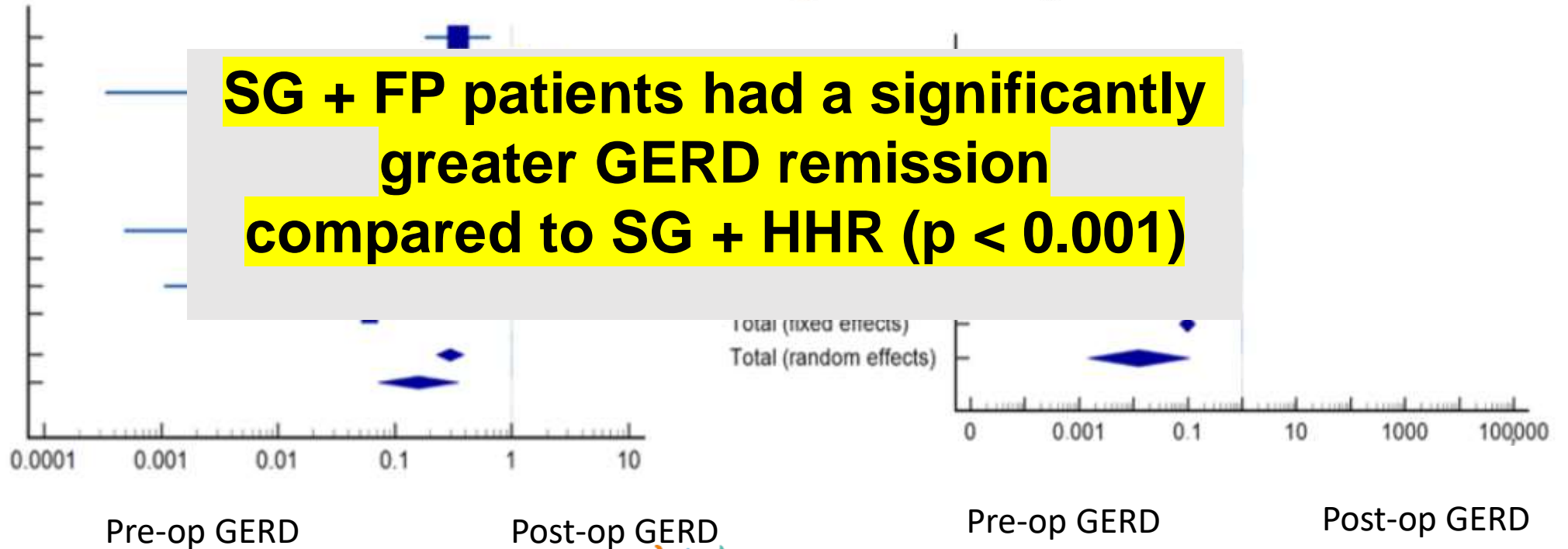


58.5 ± 28.9% GERD pre-op
20.4 ± 17.5% post-op (p < 0.001)



64.8 ± 39.4 GERD pre-op
5 ± 8.1% post-op (p < 0.001)

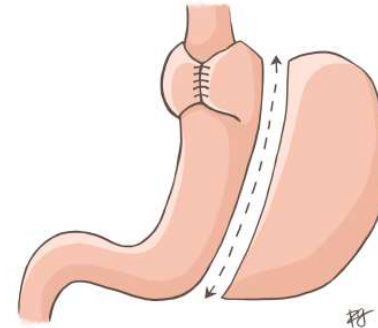
- Soricelli et al. 2013
- Santonicola et al. 2014
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- Aridi et al. 2017
- Attia et al. 2017
- Balla et al. 2017
- Balla et al. 2017
- Gero et al. 2017
- Angrisani et al. 2020
- Boru et al. 2020
- Boru et al. 2020
- Total (fixed effects)
- Total (random effects)



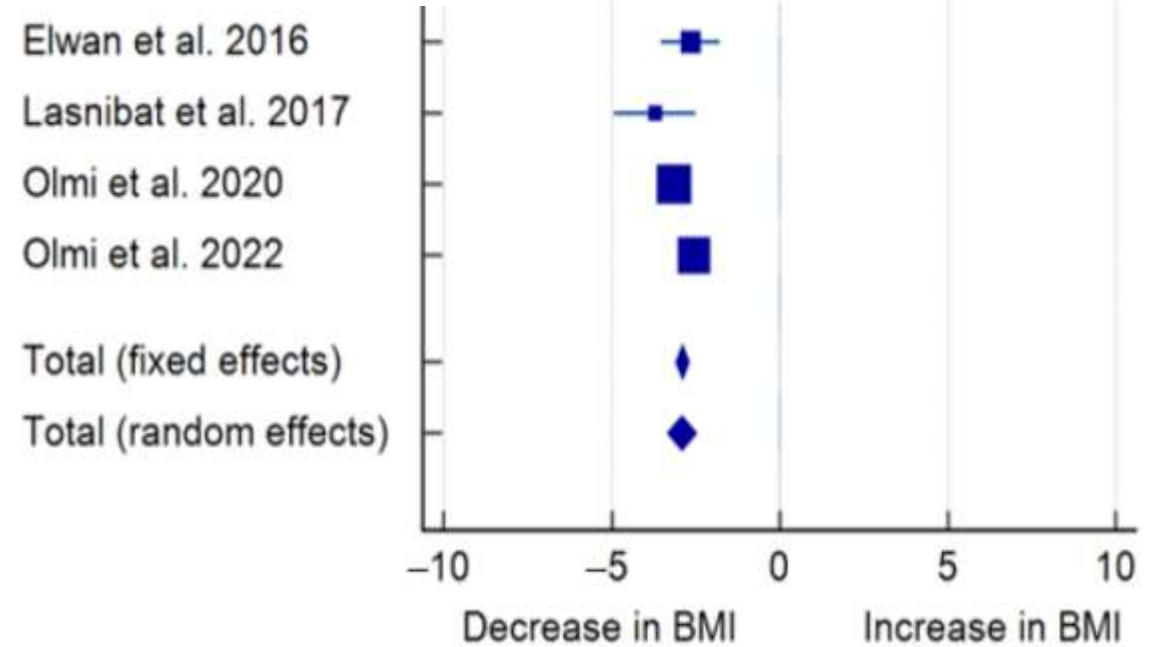
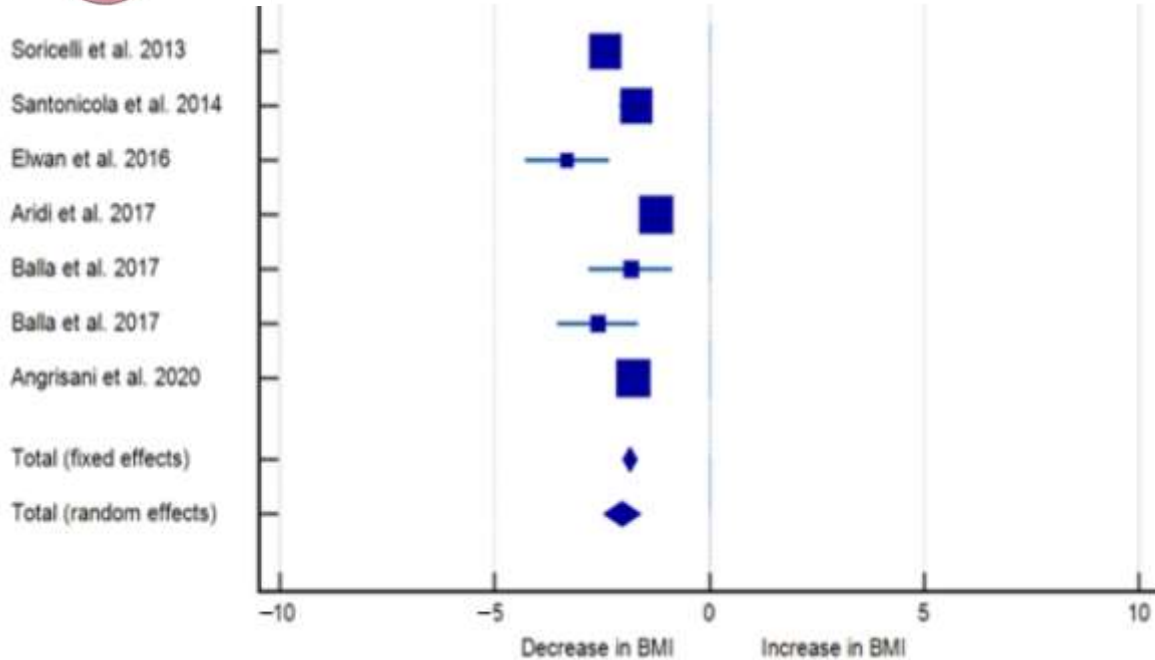
PRIMARY END POINT: 12 months weight loss



BMI post-op 31.9 kg/m²
%EWL 63.7% post-op



BMI post-op 30.7 kg/m²
%EWL 68.7% post-op



SECONDARY OUTCOME: COMPLICATIONS AND MORTALITY

	SG + HHR (n = 554)	SG + FP (n = 610)	<i>p</i> Value
Bleeding, n (%)	6 (1.08)	10 (1.63)	0.07
Gastric perforation, n (%)	0 (0)	19 (3.1)	0.002
Staple-line leak, n (%)	1 (0.18)	2 (0.33)	0.657
Mortality, n (%)	0 (0)	3 (0.5)	0.002

The rate of overall complications mainly related to gastric wrap perforation and consequent reoperation was greater after SG+FP compared to SG+HHR (p=0.002)

CONCLUSIONS

- **Both SG with concomitant HHR or FP are effective in terms of reflux resolution and weight outcomes**
- **SG + FP was superior in terms of GERD control despite greater overall complication rate**
- **SG+ HHR presented lower complication rate compared to SG + FP**

Both strategies can be suggested as a suitable alternative variant to conventional SG in case of patients affected by obesity and concomitant hiatal hernia and/or GERD

THANK YOU!

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