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I declare no conflict of interest



Harmless Hiatal dissection during sleeve gastrectomy

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ORIGINAL CONTRIBUTIONS

Gastroesophageal Reflux Disease After Laparoscopic Sleeve Gastrectomy with Concomitant Hiatal Hernia Repair: an Unresolved Question

Hanaa Dakour Aridi¹ • Mohammad Asali¹ • Tarek Fouani¹ • Ramzi S. Alami¹ • Bassem Y. Safadi¹



Table 3 Change in gastroesophageal reflux disease symptoms at 1 year after LSG with and without HHR

	LSG alone (n = 89)	LSG+HHR (n = 76)	p value
Preoperative GERD*	37 (41.6)	47 (61.8)	0.04
GERD remission	11 (29.7)	10 (21.3)	0.45
GERD improvement	1 (2.7)	3 (6.4)	0.63
GERD persistence (no change)	11 (29.7)	15 (31.9)	0.83
GERD worsening	14 (37.8)	19 (40.4)	0.81
De novo GERD	24 (46.2)	12 (41.4)	0.68
De novo GERD on frequent PPI	18 (34.6)	9 (31.0)	0.74

LSG laparoscopic sleeve gastrectomy, HHR hiatal hernia repair, GERD gastroesophageal reflux disease, PPI proton pump inhibitor

*Statistically significant ($p < 0.05$)

Conclusions Routine HHR at the time of LSG does not show an improvement in GERD symptoms. More prospective studies are needed to clarify the role of the routine dissection,



ORIGINAL CONTRIBUTIONS

The Effect of Laparoscopic Sleeve Gastrectomy with Concomitant Hiatal Hernia Repair on Gastroesophageal Reflux Disease in the Morbidly Obese

Kamran Samakar¹ · Travis J. McKenzie² · Ali Tavakkoli³ · Ashley H. Vernon³ · Malcolm K. Robinson³ · Scott A. Shikora³

Follow-up: 97.5 months
Retrospective

LSG with concomitant HHR improved GERD symptoms or the need for daily antisecretory therapy only in a third (N=58) of symptomatic patients. Furthermore, 15.6% of asymptomatic patients developed de novo GERD symptoms despite a HHR. In patients with a documented hiatal hernia, HHR does not lead to GERD resolution or prevention after LSG

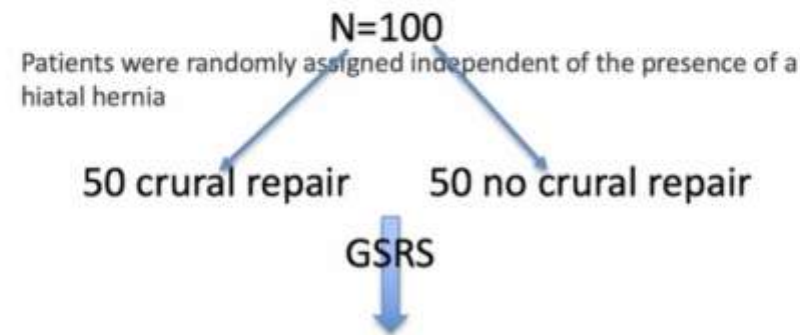


A randomized trial comparing reflux symptoms in sleeve gastrectomy patients with or without hiatal hernia repair



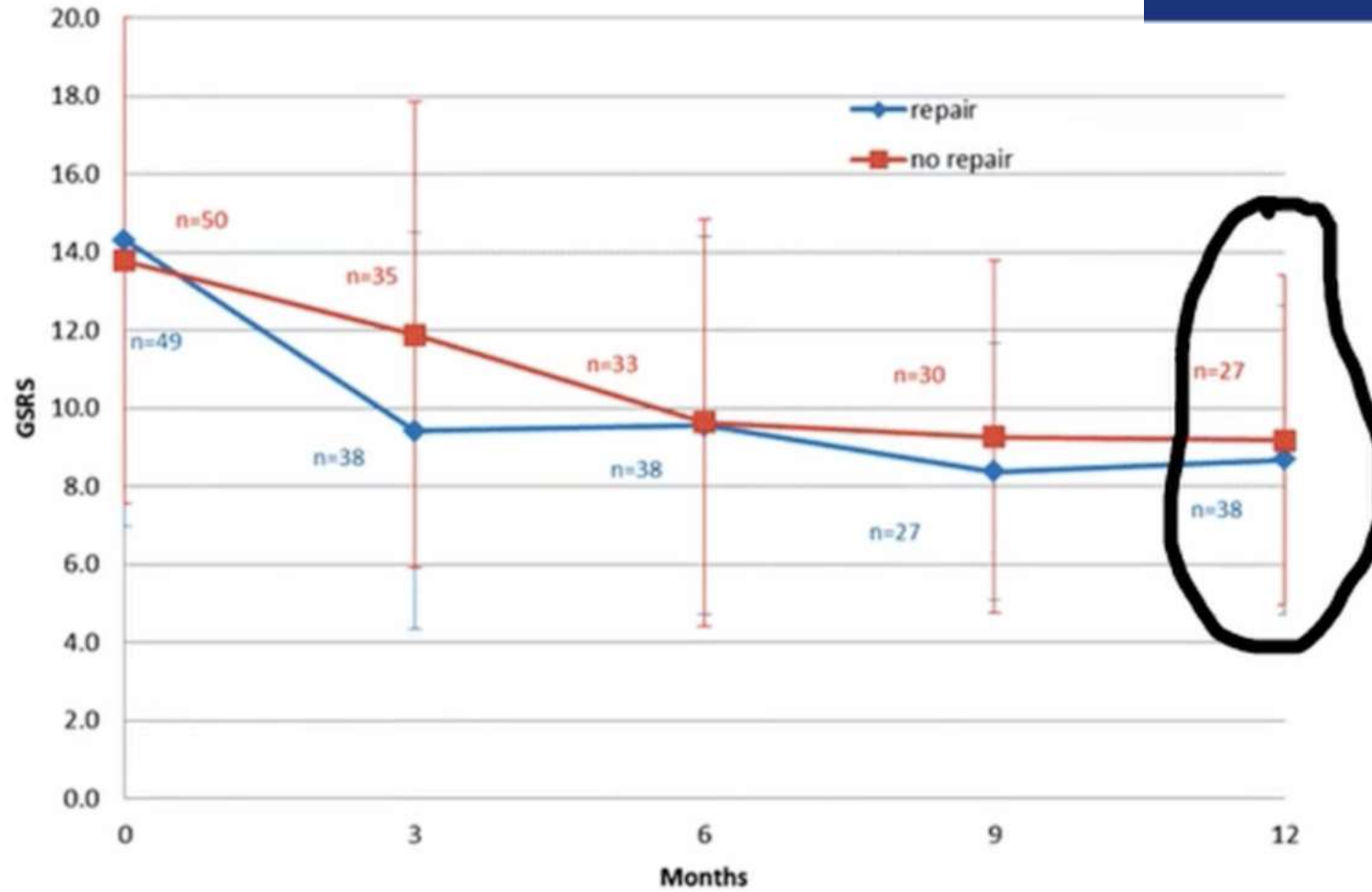
Brad Snyder M.D.  , Erik Wilson M.D., Todd Wilson M.D., Sheilendra Mehta M.D., Kulvinder Bajwa M.D., Conniw Klein N.P.

Exclusion criteria: [esophagitis](#), [ulcer](#), or other abnormalities at the time of upper [endoscopy](#) (EGD) including any hiatal hernia >4 cm



GSRs: gastrointestinal symptoms rating scale

Change in GSRS over Time After LSG



Overall outcomes at 1 year after LSG:
66% improved
14% idem
19% worse

Outcomes at 1 year after LSG with or without crural repair:
No difference



Does hiatal repair affect gastroesophageal reflux symptoms in patients undergoing laparoscopic sleeve gastrectomy?

Philip Le Page¹ · David Martin¹ · Craig Taylor¹ · Jennifer Wang¹ · Himanshu Wadhawan^{2,3} · Gregory Falk¹ · Simon C. Gibson^{1,2}

Purpose: to evaluate the effect of surgically treating hiatal weakness on GERD symptoms in patients undergoing LSG.

Method: prospective observational

Assessment: HRQL questionnaire

N=100

Prospective Observational
Follow-up 18.9 months

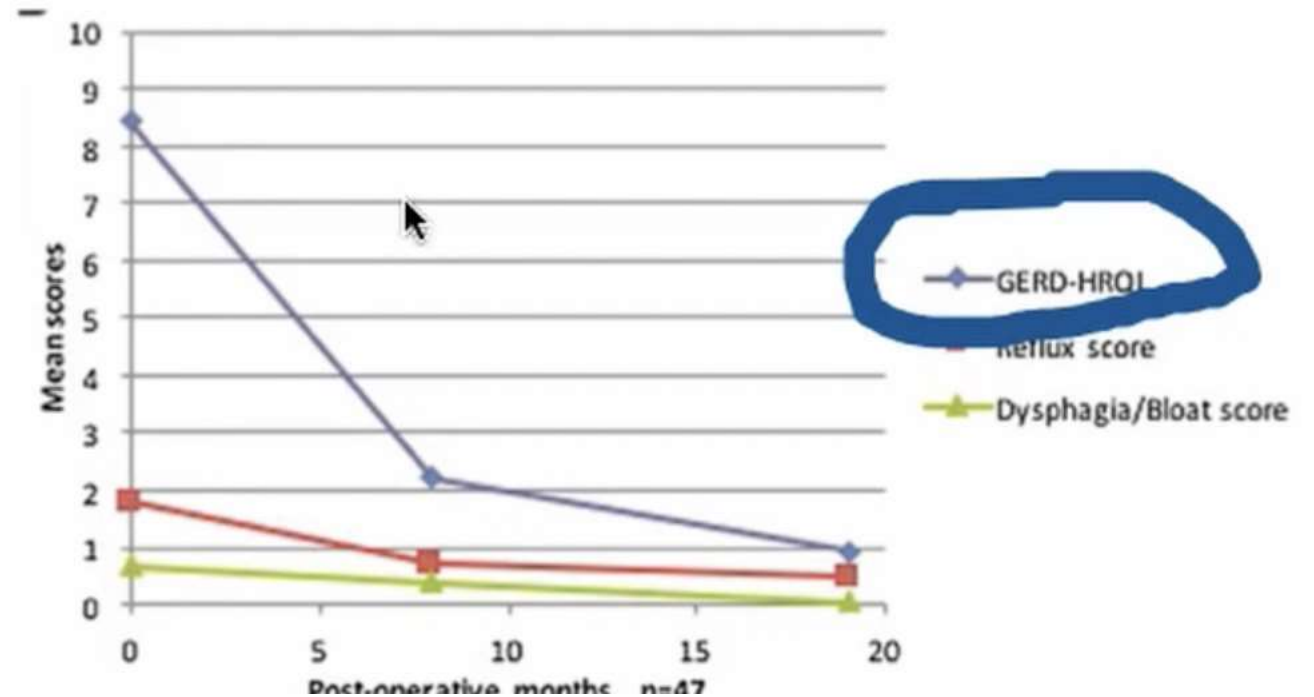
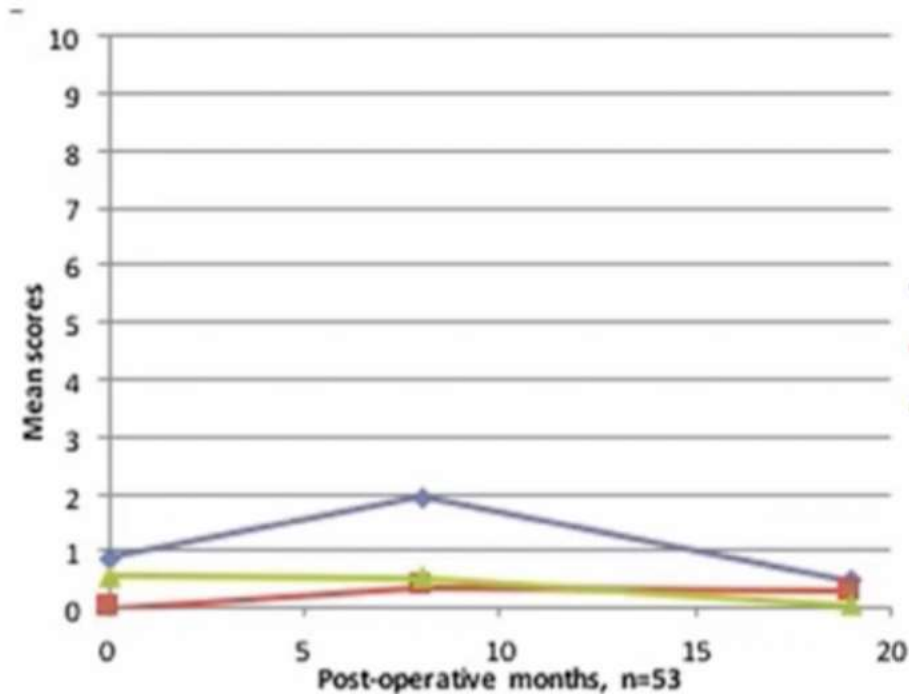
N=100

53 No reflux

including 24 who had HHR

47 Reflux symptoms

including 26 who had HHR





Effect of Concomitant Laparoscopic Sleeve Gastrectomy and Hiatal Hernia Repair on Gastroesophageal Reflux Disease in Patients with Obesity: a Systematic Review and Meta-analysis

Wenhui Chen¹ · Jia Feng² · Cunchuan Wang¹ · Yucheng Wang¹ · Wah Yang¹ · Zhiyong Dong¹ · on behalf of Chinese Obesity and Metabolic Surgery Collaborative¹

18 studies totalling
937 patients

The incidence of GERD remission after SG+HHR was 68.0% (95% CI: 55.0-80.9%)

Forest plot:
GERD remission

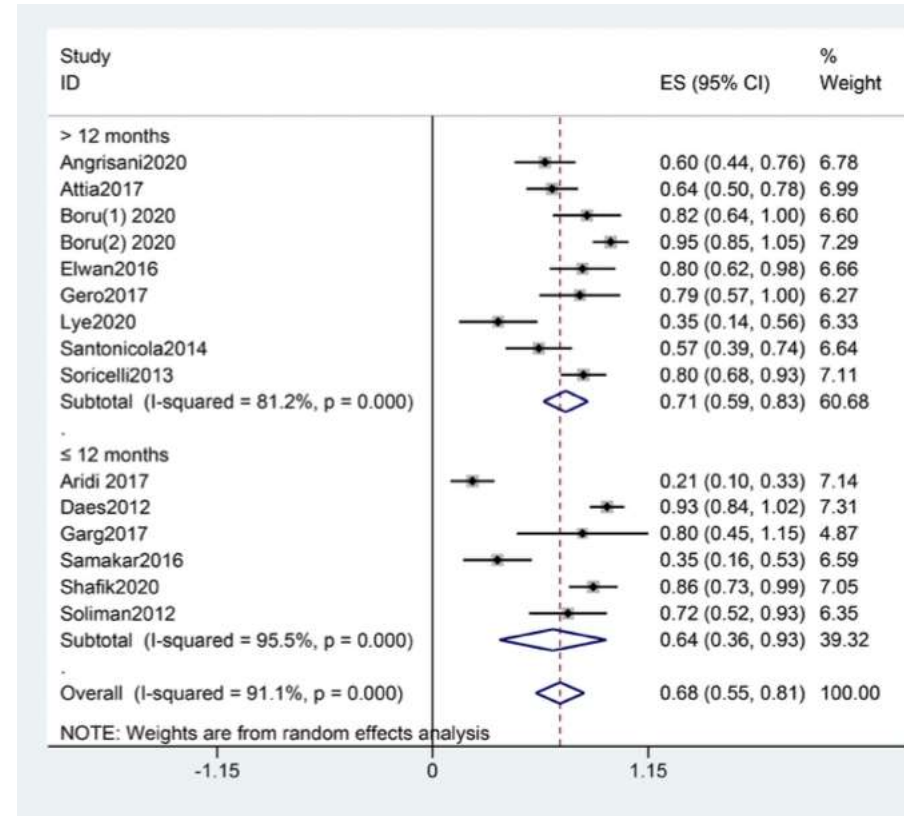
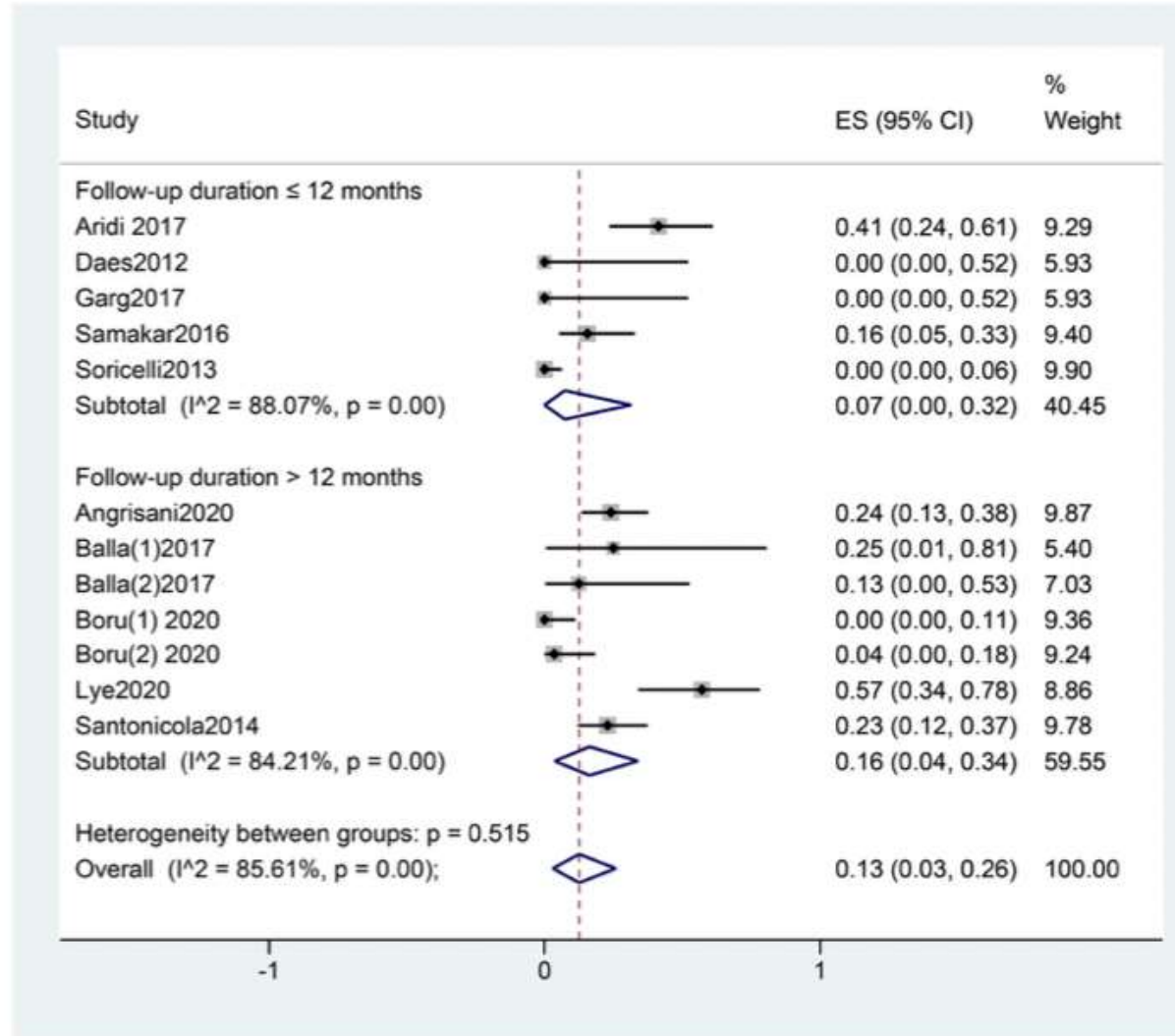


Fig. 5 Forest plot showing the incidence of de novo GERD

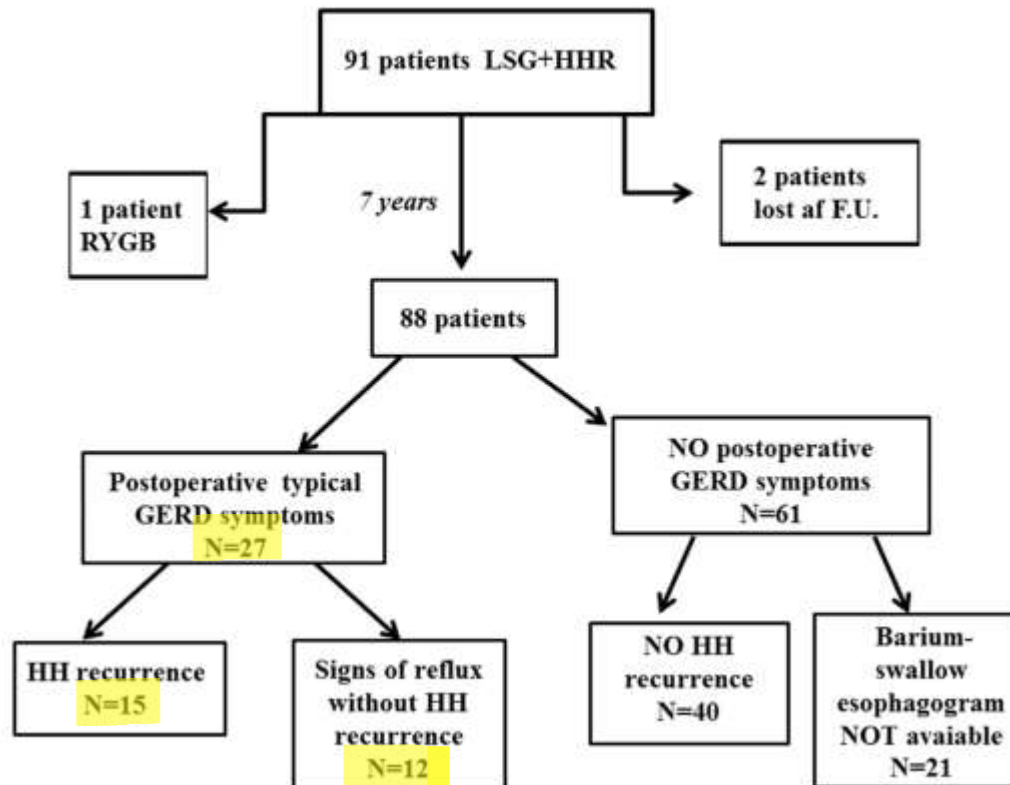
de novo GERD was 12% (95% CI: 8-16%)
 HH recurrence was 11% (95% CI: 4 to 19%).
 SG+HHR was superior to SG alone in GERD remission (OR: 2.97, 95% CI: 1.78 to 4.95, $P < 0.0001$).
 BUT no significant difference in de novo GERD after SG+HHR compared with SG alone.



Original article

Sleeve gastrectomy with concomitant hiatal hernia repair in obese patients: long-term results on gastroesophageal reflux disease

Luigi Angrisani, M.D.^a, Antonella Santonicola, M.D.^{b,*}, Vincenzo Borrelli, M.D.^c,
Paola Iovino, M.D.^b



retrospectively analyzed
91 obese patients
submitted to SG + HHR
with a minimum of 7-years
follow-up

36 of 91 (39.6%) patients had typical GERD symptoms
37 of 91 had a correct diagnosis of HH, of whom
1/3 complained of typical GERD symptoms.

HH recurrence seems to be concomitant with GERD

If Diagnosis made → How to avoid recurrent HH in LSG?

DO NOT HARM



Muscular Anatomy of the Gastroesophageal Junction and Role of Phrenoesophageal Ligament

Autopsy Study of Sphincter Mechanism

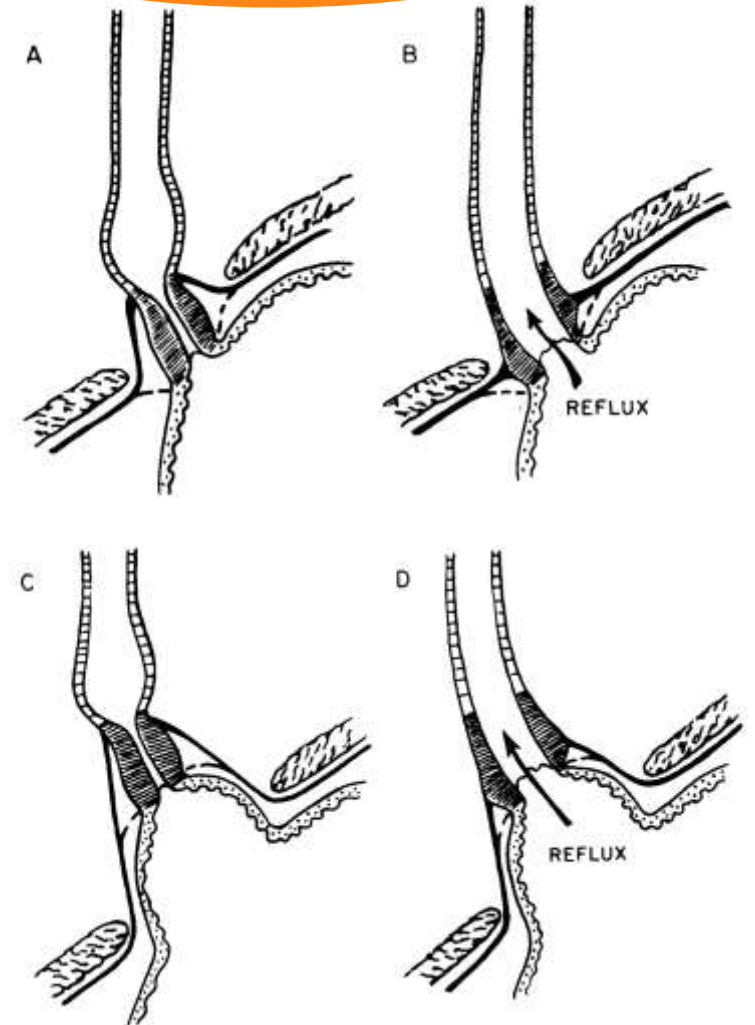
C. THOMAS BOMBECK,* M.D., DAVID H. DILLARD,** M.D., F.A.C.S.,
LLOYD M. NYHUS,*** M.D., F.A.C.S.

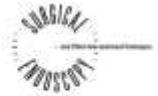
From the Department of Surgery of the University of Washington School of Medicine and the First University Surgical Service of the University Hospital, Seattle, Washington

Importance of phreno-esophageal membrane in Pathophysiology of reflux: integrity of membrane implies integrity of LES and protects from reflux

Should the hiatus be widened, and the ligamentous insertion displaced (even in absence of hiatal hernia), tension would then be applied laterally to the sphincter, tending to distract it hereby facilitating reflux

Annals of Surgery 1966





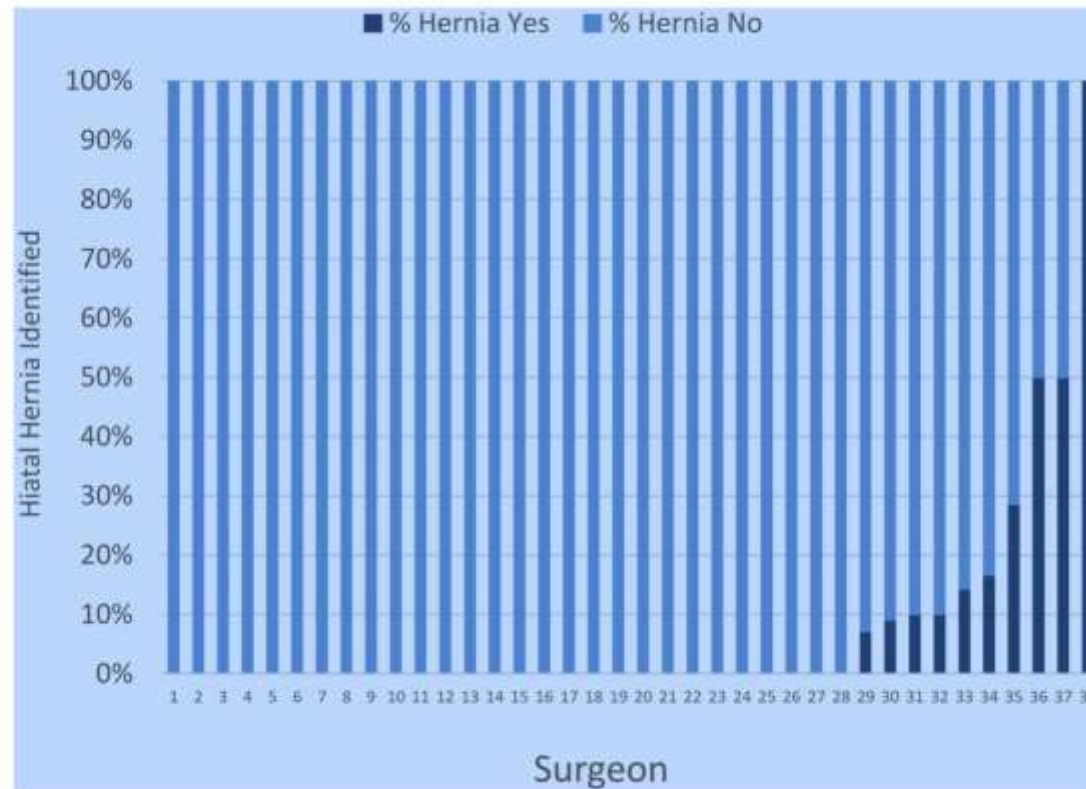
In the eye of the beholder: surgeon variation in intra-operative perceptions of hiatal hernia and reflux outcomes after sleeve gastrectomy

Anne P. Ehlers^{1,2} · Karan Chhabra^{2,3,4} · Jyothi R. Thumma² · Justin B. Dimick^{1,2} · Oliver Varban¹

38 surgeons evaluated 33 videos of patients who did not undergo HH repair

The goal of this study was to assess surgeon variation in intra-operative diagnosis of hiatal hernia during LSG and its effect on repair rates, as well GERD outcomes. To accom-

Fig. 1 Variation in surgeon perception of hiatal hernia during video review of 33 laparoscopic sleeve gastrectomy procedures



10 surgeons detected at least ONE hiatal hernia

To avoid (de novo) GERD in sleeve gastrectomy one should:

- 1/ check for widening of hiatus
- 2/ do the check **without touching the ligamentous insertion of LES**
i.e. the phreno-esophageal membrane (PGM)

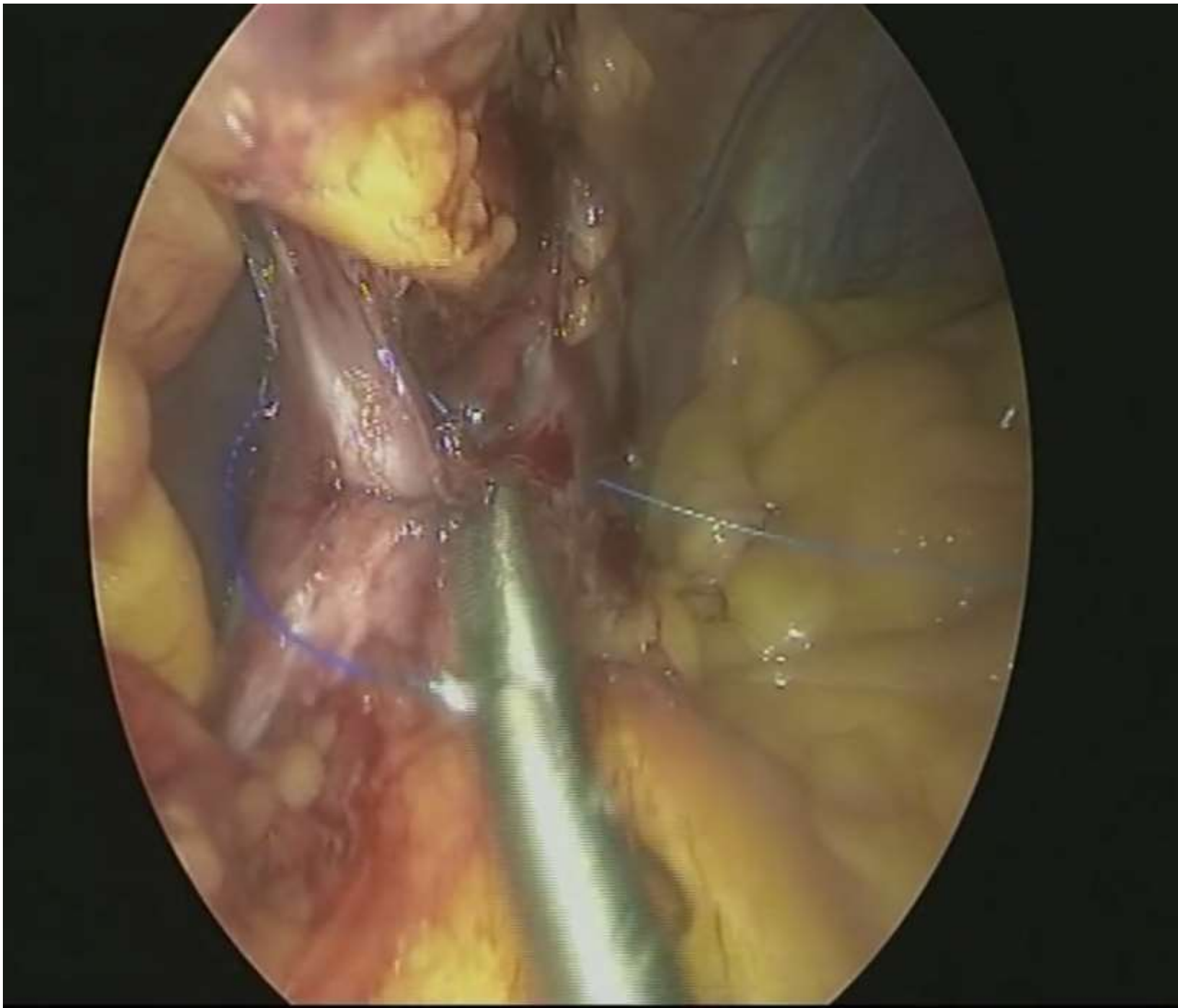
→ Posterior approach to the hiatus

→ Avoid dissection of PGM









Posterior figure of 8
Hiatoplasty

CONCLUSIONS

- No clear evidence that hiatal hernia dissection is useful in LSG
- No clear evidence that hiatal hernia repair is beneficial in LSG
- Preserving integrity of esogastric membrane is most likely important