Hiatal hernia Repair and Obesity Surgery

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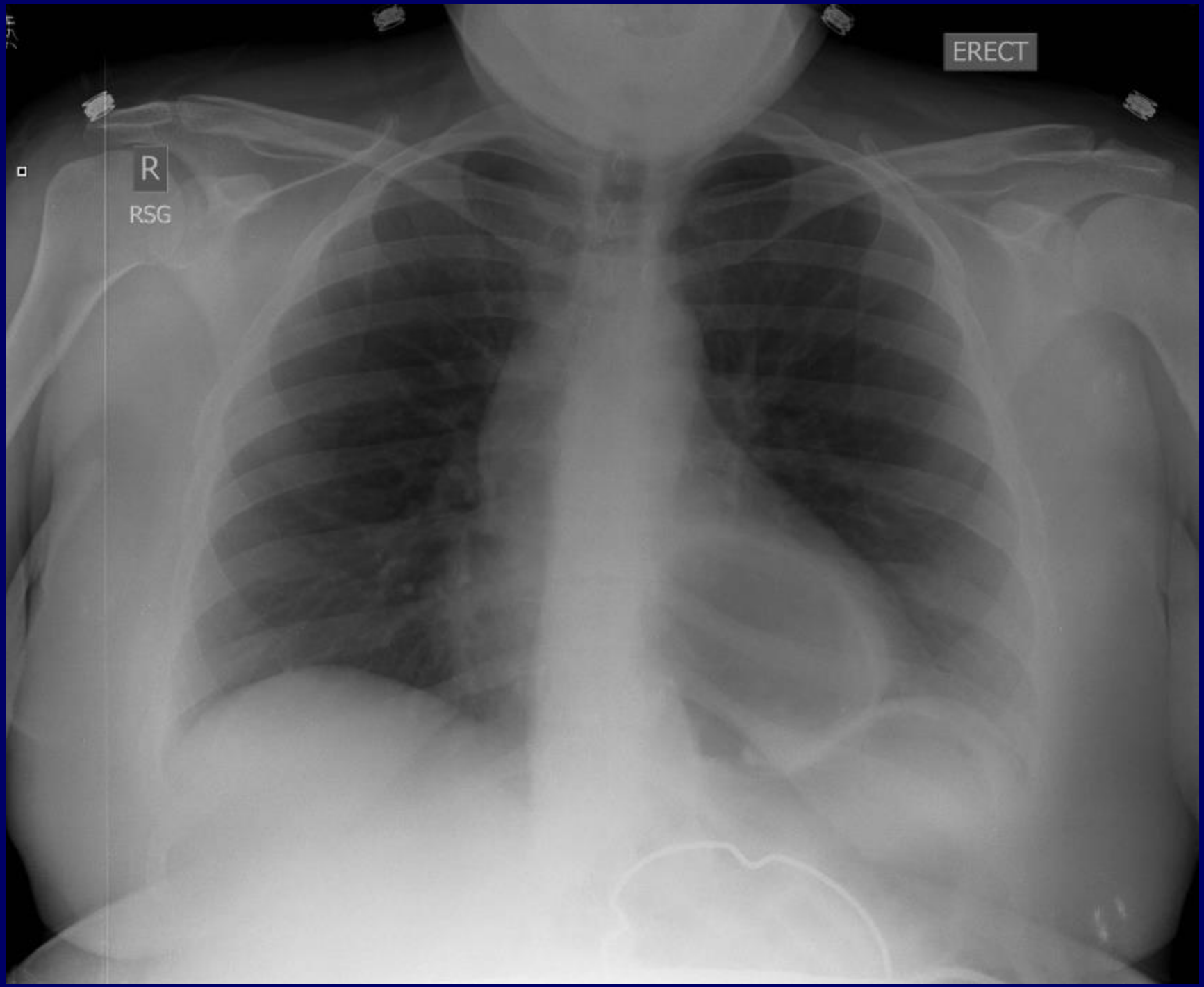
PEH History

- First identified on post-mortem examination in 1903
- On UGI contrast radiography by Ackerlund in 1926

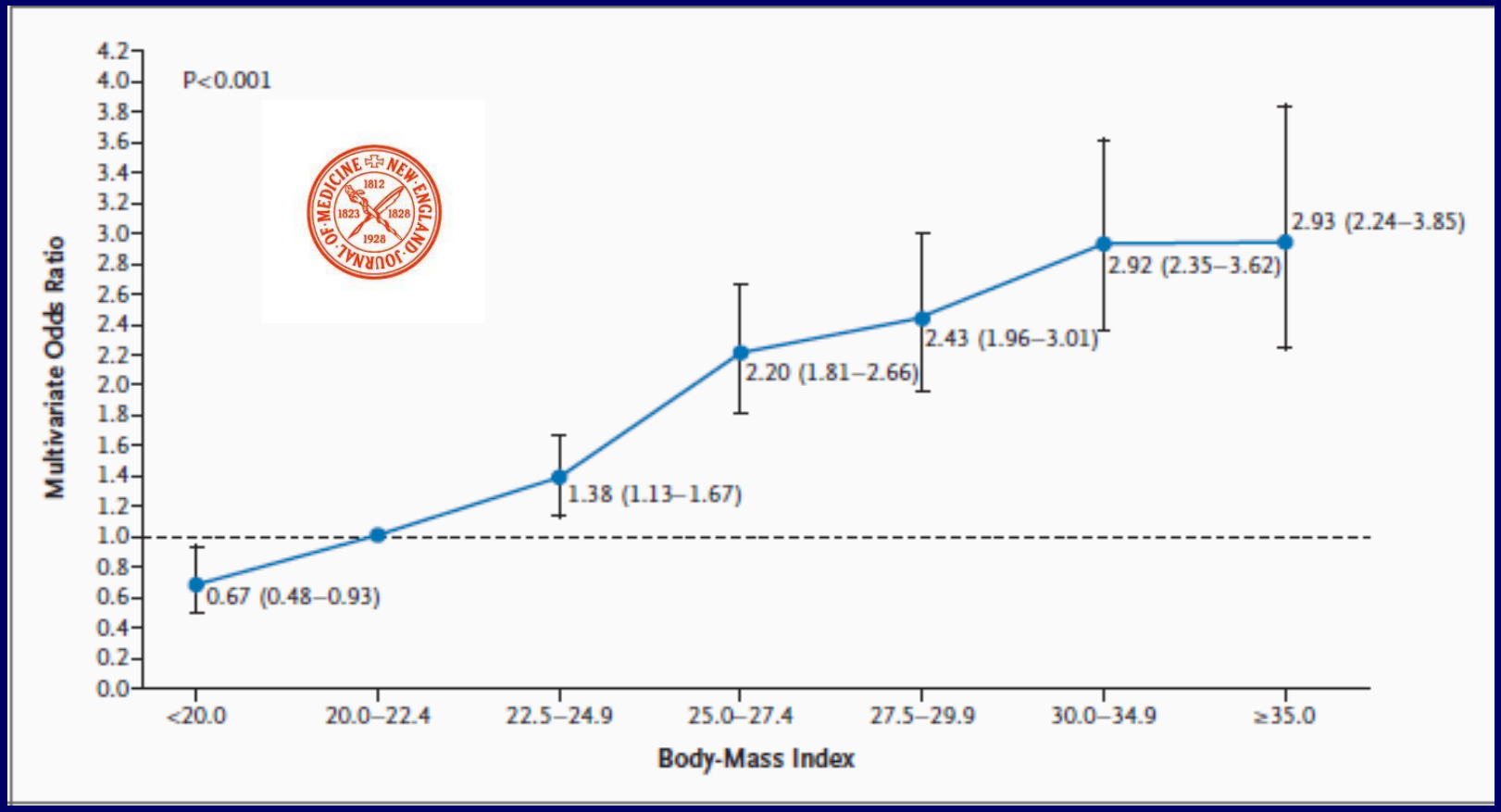

ERECT
R
RSG

Obesity

- Major Public Health problem
  - 600 million people >18 have obesity
  - 42 million kids <5 years are overweight
- In the United States of America
  - 35.1% of adults have obesity
    - 1 of every 3 adults is obese
    - 1 or 20 adults have a BMI >40
  - Estimated 147-210 billion dollars cost per year
  - 500,000 deaths each year related to obesity

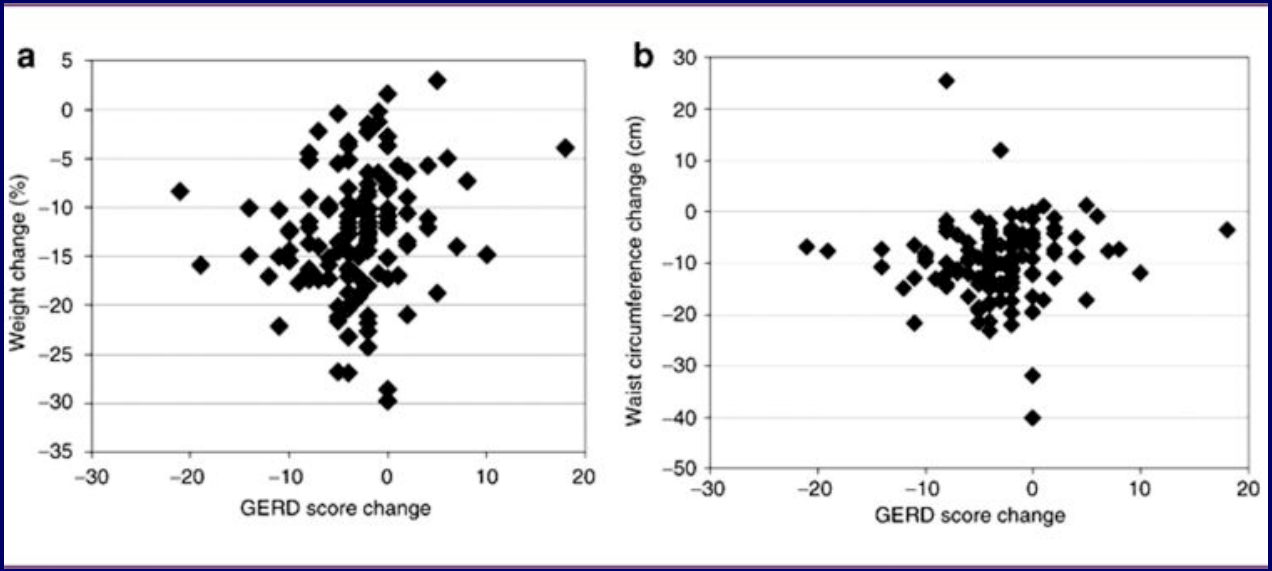

High BMI =
GERD
Risk

Higher BMI = Higher GERD



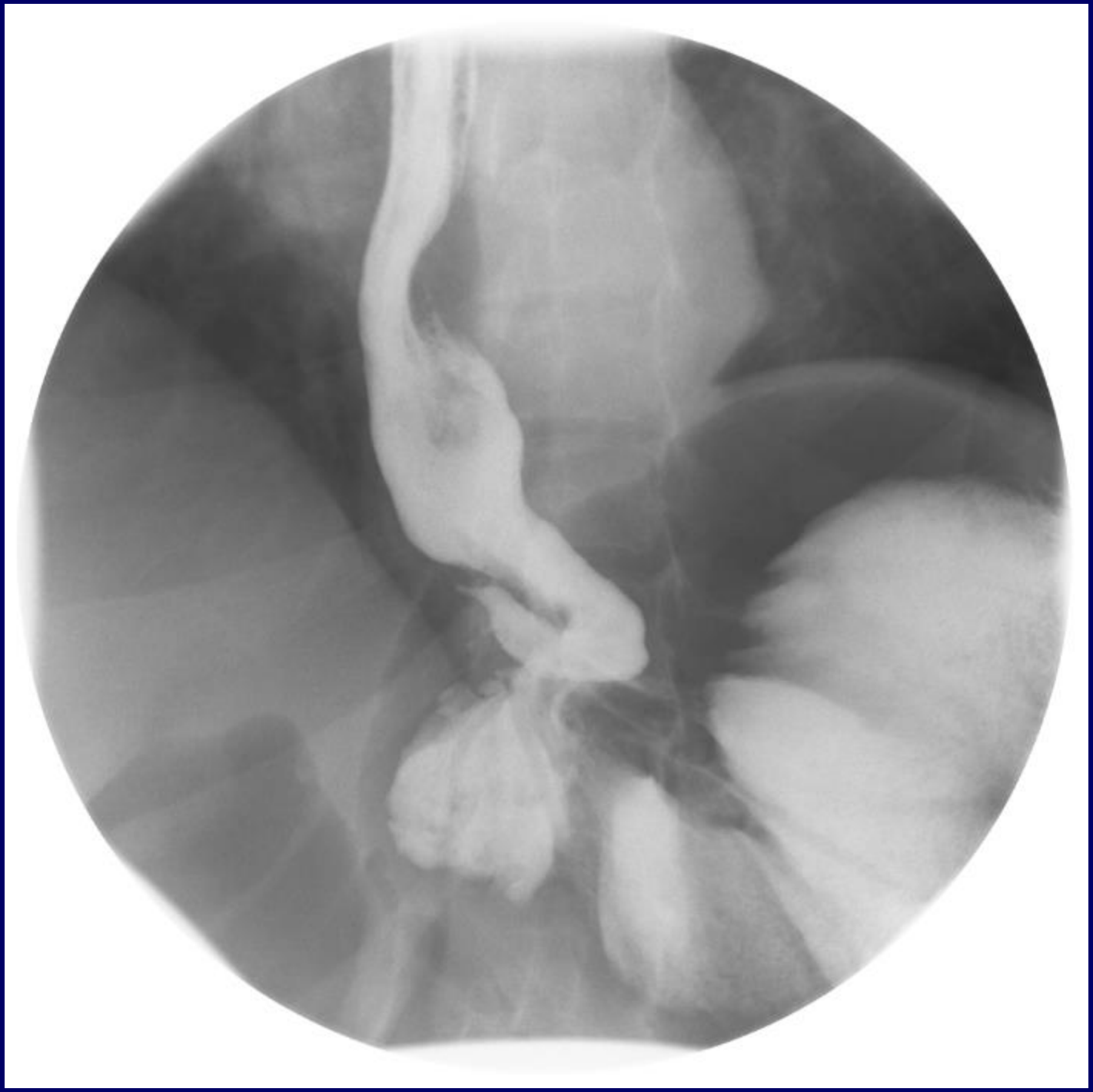
Jacobson BC et al. N Engl J Med 2006;354:2340-8

GERD after weight loss

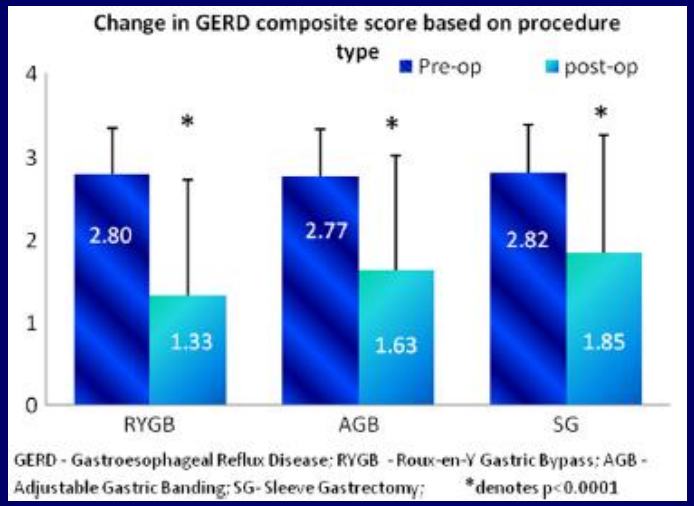


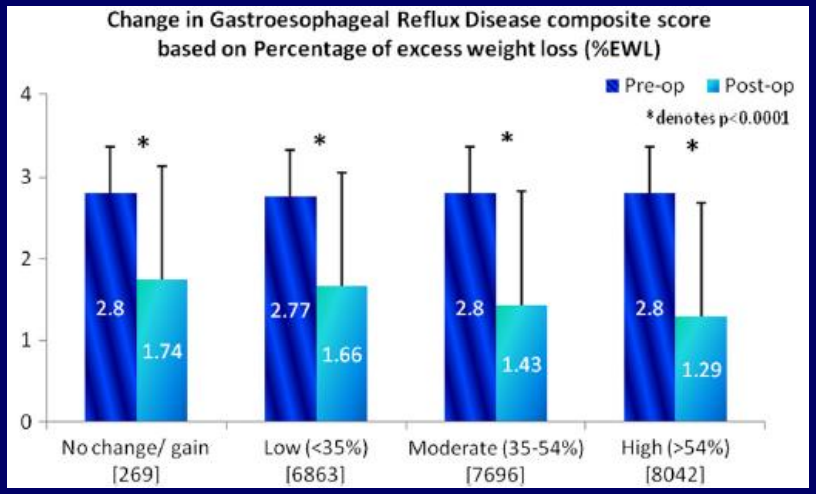
- 332 patients with BMI 35 structured weight loss
  - 97% lost 13kg (28.6 lbs.)
  - Symptom improvement in 81% (5.5 a 1.8)
  - 65% full resolution
  - Direct relation between weight lost and improvement

Singh M et al. 2013 Obesity;21:284-90



GERD and bariatric surgery



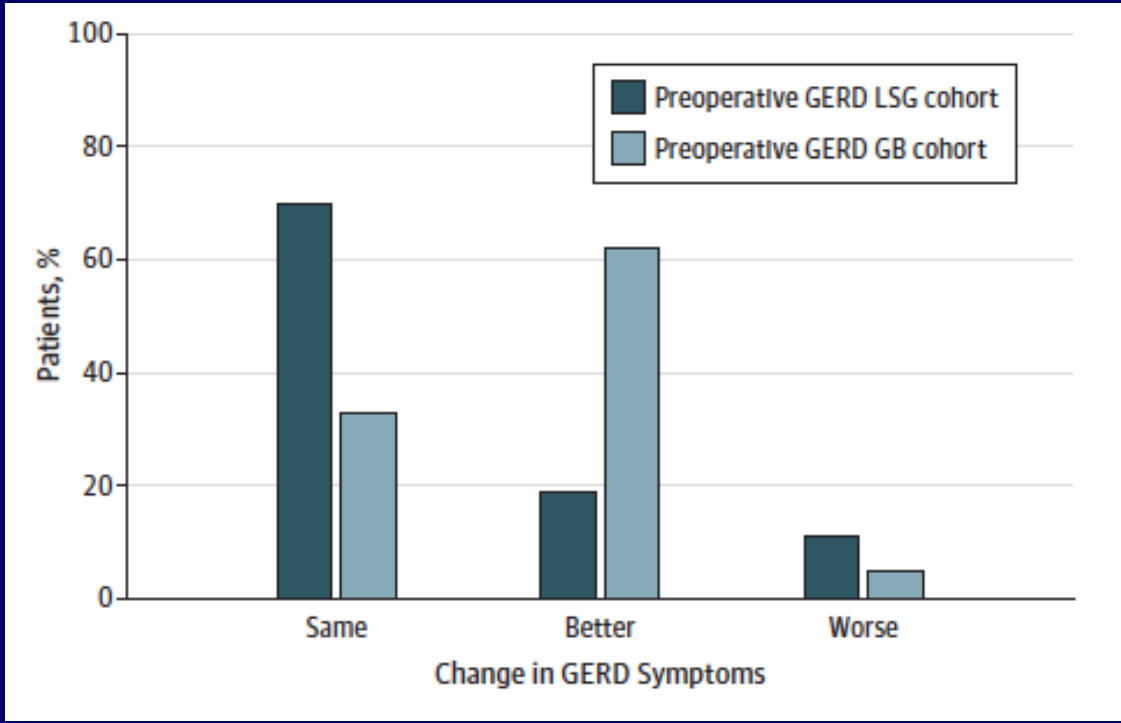


- Improved symptoms
  - Higher in RYGB
  - Lower in Sleeves
- Direct correlation between weight and improvement of symptoms

Pallati PK et al. SOARD 2014;10:502-7

Pre existing GERD

- 62.8% resolution after RYGB
- 15.9% resolution after sleeve
- 8.6% new onset GERD after sleeve



DuPree CE et al JAMA Surgery 2014;4 :228-34

GERD in Duodenal Switch

	Preoperative	Postoperative	*P*
ERD	17 (15.0%)	53 (46.9%)	<0.001
Medication intake	10 (8.8%)	43 (38.1%)¶	<0.001
PPI	7	39	
H2-receptor antagonist	2	3	
Antiacid	1	1	
No medical therapy	7	10	

- 153 patients post-LDS 113 follow-up mean 130mo

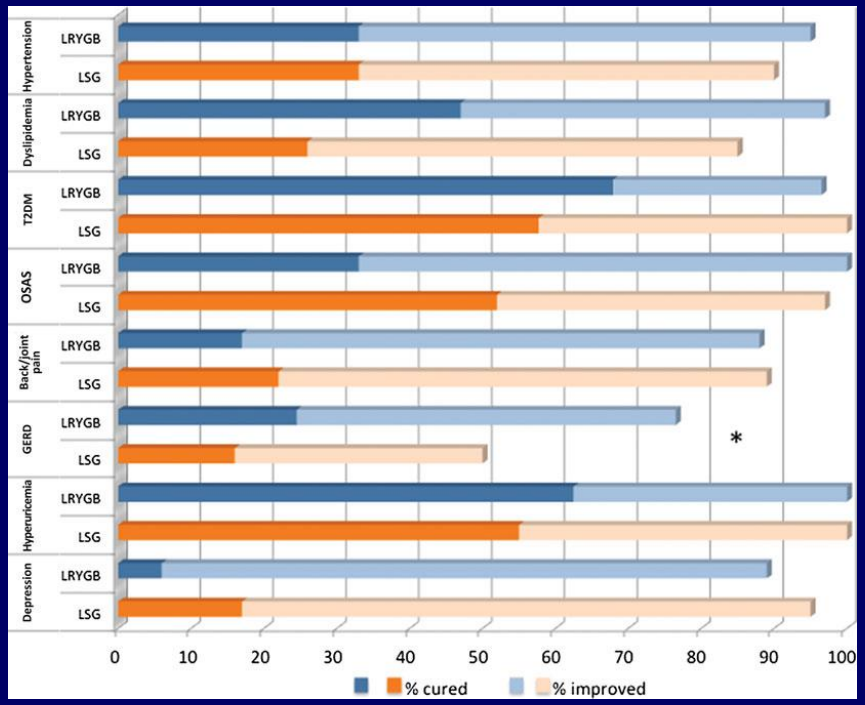
- 3 of 17 (35%) Preexisting GERD resolved
- 42 of 96 asymptomatic developed de novo GERD

Bolckmans and Himpens Annals of Surgery 264,6, 12/2016

GERD after bariatric surgery

Swiss Multicenter Bypass or Sleeve Study (SM-BOSS)

- 75% improvement after RYGB
- 50% improvement after SG
- 4% new onset GERD after RYGB
- 12.5% new onset GERD after SG



Peterli et al Annals of Surgery 2013;258(5):690-5

Factors associated to GERD after sleeve and DS

Inevitable

- Decreased elasticity of stomach
- Destruction of angle of His fibers
- Changes in LES structure and possibly strength

Avoidable

- Angulation
  - Corkscrewing or stenosis
- Neo fundus
  - Widening of proximal sleeve
- Hiatal Hernia
  - Not detected
  - Ignored

Factors associated to GERD after RYGB

Inevitable

- Destruction of angle of His fibers
- Changes in LES structure and possibly strength

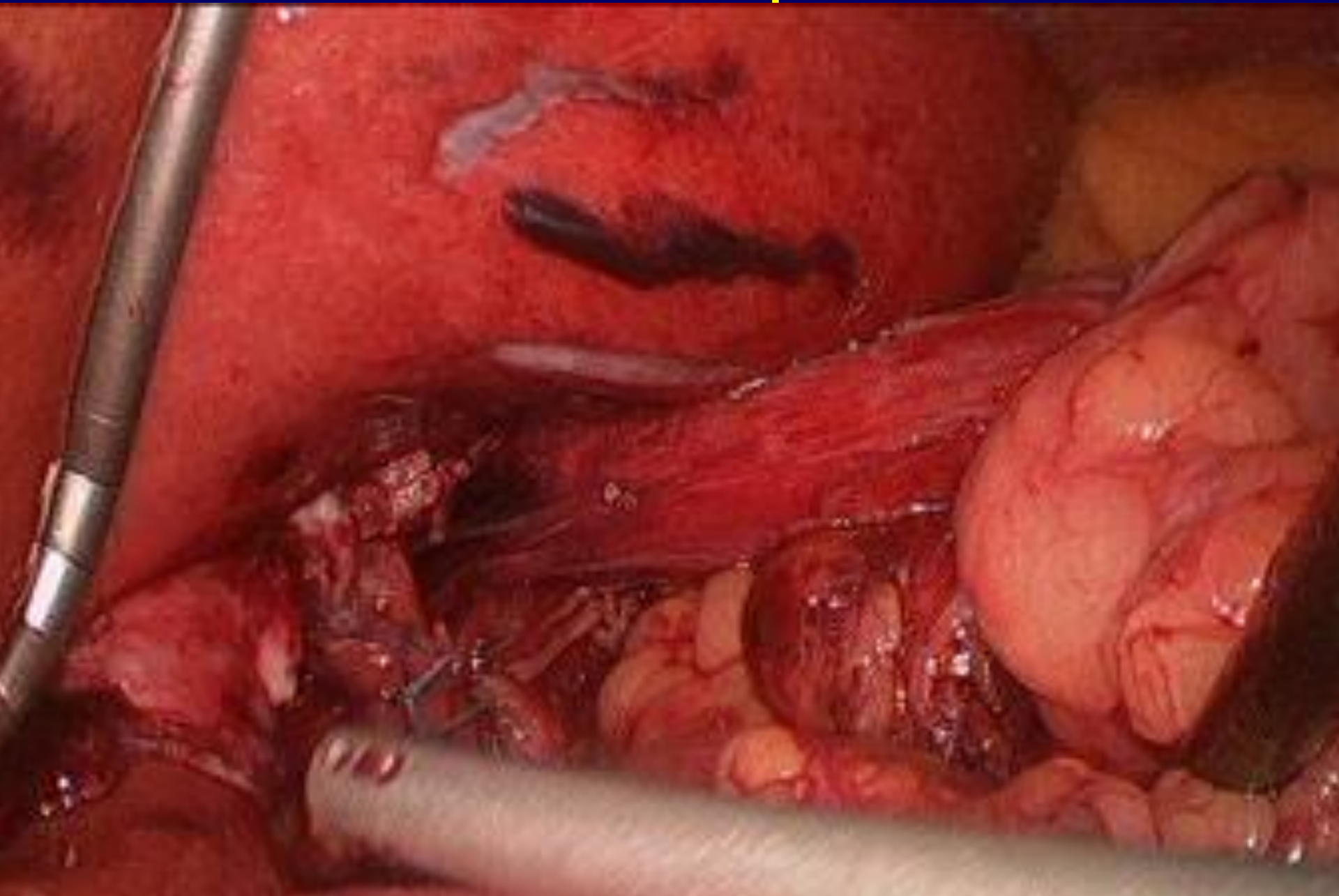
Avoidable

- Large Pouch >50ml
  - Parietal cell mass
  - Increased acid
- Hiatal Hernia
  - Not detected
  - Ignored
- Internal hernia /obstruction

Obesity and GERD

- Anti-Reflux Surgery vs. Bariatric Surgery for Obese GERD Patients: A 2023 review in Cirugía Española
- Compared traditional anti-reflux procedures (fundoplication) with bariatric surgery (gastric bypass or sleeve)
- Fundoplication outcomes worsen as BMI increases –
- Obese patients have higher rates of reflux recurrence after Nissen fundoplication.
- Conclude that Bariatric Surgery Improves GERD outcomes compared to Fundoplication alone

Crural Repair



Match hiatal hernia Repairs

- A 2023 systematic review and meta-analysis in Obesity Surgery
- examined outcomes of concurrent hiatal hernia repair during bariatric procedures (LSG, LRYGB, and gastric banding).
- Across 17 studies, it concluded that performing a hernia repair at the time of bariatric surgery is safe with no increase in mortality, and it significantly improves GERD outcomes in sleeve patients.

Concomitant Sleeve and Hiatal Hernia Repair

- 203 pts with LSG and HH repair
- 203 matched pts with LSG alone
- HH added time to the OR, No change in complications
- De novo GERD significantly higher without HH repair
- GERD decreased with LSG and HH repair
  - Nakeeb AE, et al. Obesity Surgery 2025

HH repair with concurrent Sleeve or Roux en Y GB

- 2010-2017
  - 1546 SG with HHR to 3170 SG alone
  - 457 RGB with HHR to 1156 with RGB alone.
  - No matching for HH
  - 73% had 3 year follow up
- SG with HHR more likely to have other operations and endoscopies(at 1 and 3 years)
- RGB with HHR same rate of complications
  - Lewis KH et al Surg Obes Relat Dis, 2021

Impact of concurrent hiatal hernia repair during laparoscopic sleeve gastrectomy on patient-reported gastroesophageal reflux symptoms: a state-wide analysis

- Michigan registry of LSG 2015-2019
- GERD HRQL recorded pre op and 1 yr
- 11742 pts had SG, 4015 had SG and HHR
- Pts with HHR had better GERD symptoms
- Lower rates of new symptoms
- Conclude: HHR improved GERD symptoms
    - Hider AM, Surg Obes Relat Dis, 2023

Hiatal hernia repair in obesity

- Impact of BMI on Recurrence: A retrospective study published in 2023 in the journal Foregut investigated
- Long-term hernia recurrence after laparoscopic repair in relation to BMI.
- Significantly lower recurrence rates than overweight or obese patients (10.8% vs ~26%).

LS vs Robo

- Robotic vs. Laparoscopic Outcomes: In 2024, a Surgical Endoscopy publication using the ACS-NSQIP
- Database compared robotic-assisted vs. laparoscopic hiatal hernia repairs.
- It reported no significant difference in overall complication or readmission rates between the two techniques.

Prosthetics

- Biologic vs Permanent
- Prophylactic
- Effect the underlying mechanism
- Short or Long term benefit
- Conclusions:
  - Limited benefit, potential for high risk
  - Selected use (very selective)

Biologic Reinforcement reduces Recurrence

- **Biologic prosthesis reduces recurrence after laparoscopic paraesophageal hernia repair: a multicenter, prospective, randomized trial.**
  Oelschlager BK, Ann Surg, 2006
- 108pts at 4 centers randomized to primary repair (n = 57) or buttressed with SIS (n = 51)
- Recurrence at 6mos >2cm, 4 patients (9%) in the SIS and 12 patients (24%) in the primary group (P = 0.04).
- Adding a biologic prosthesis during LPEHR reduces the likelihood of recurrence at 6 months, without mesh-related complications or side effects.

Biologic Reinforcement Does Not affect Recurrence

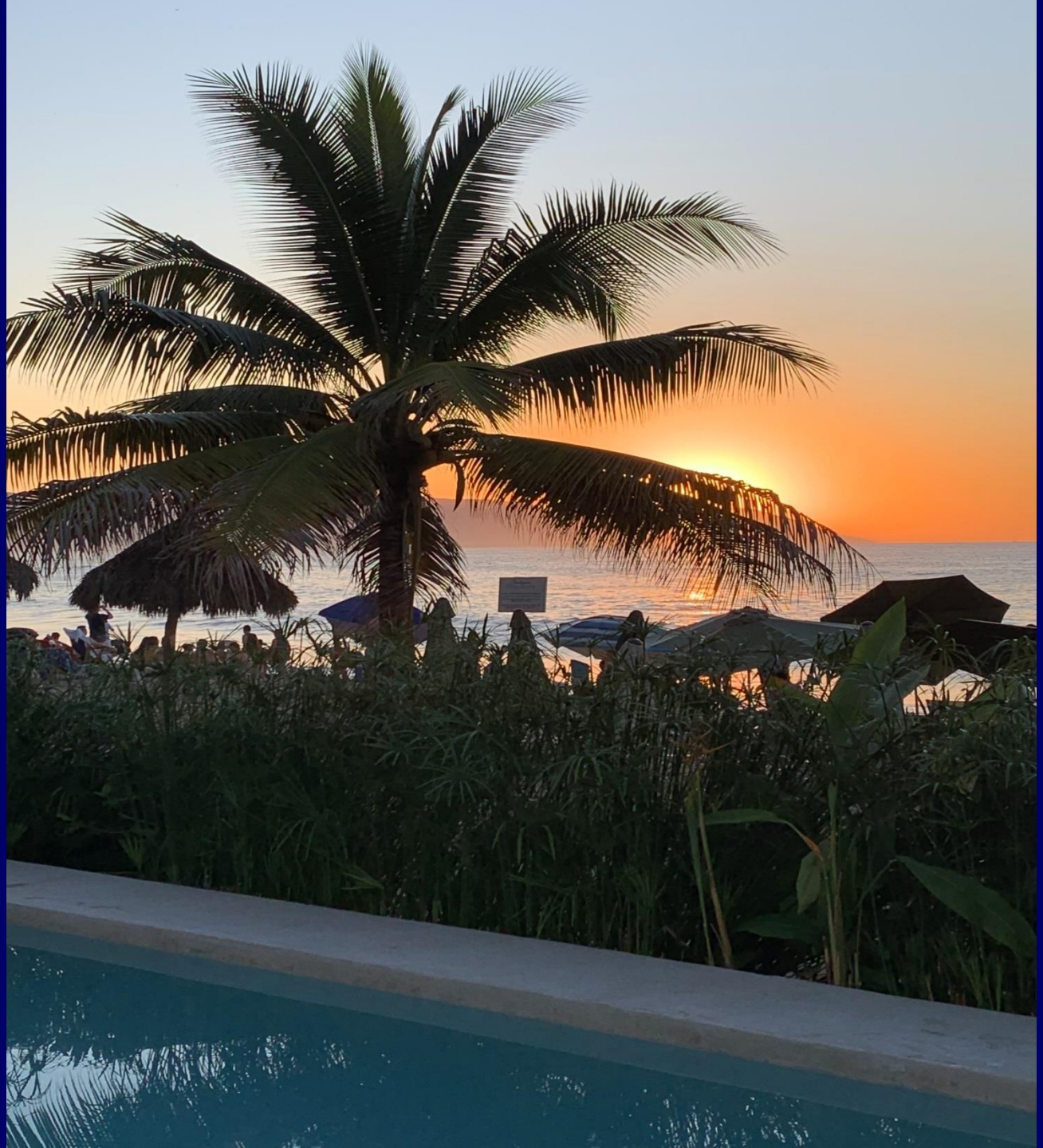
- Long term Follow up of the study
- At median follow-up of 58 months, 72 completed clinical follow-up
- 20 patients (59%) recurrent HH in the PR
- 14 patients (54%) recurrent HH in the SIS group ($p = 0.7$).
- NO difference in symptoms.
- No erosions, strictures or reoperations
- LPEHR results in long and durable relief of symptoms and improvement in QOL with PR or SIS.

Summary & Future Directions

- Minimally invasive techniques are preferred for obese patients due to lower complication rates.
- - Obesity significantly increases recurrence risk, making weight management critical.
- - Combining bariatric and hernia surgery improves long-term success in appropriate patients.
- - Further studies are needed to refine robotic approaches and perioperative weight loss strategies.

Summary

- Individual Clinical Scenarios
- HH and Obesity= a Repair+ RYGB
- Preop GERD , not a Sleeve
- Preop Hiatal Hernia should be repaired
- For GERD and HH, RYGB and HHR ideal
- Outcomes should be similar to no HHR



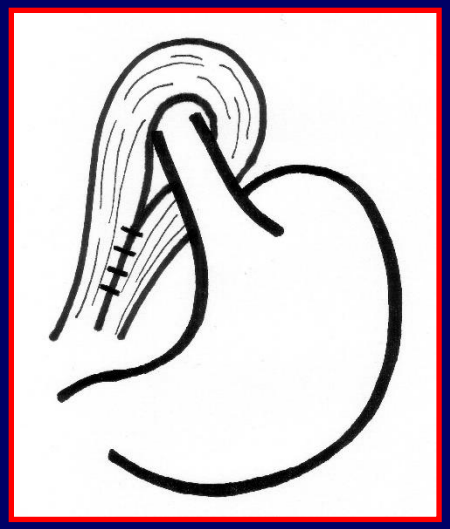
References:

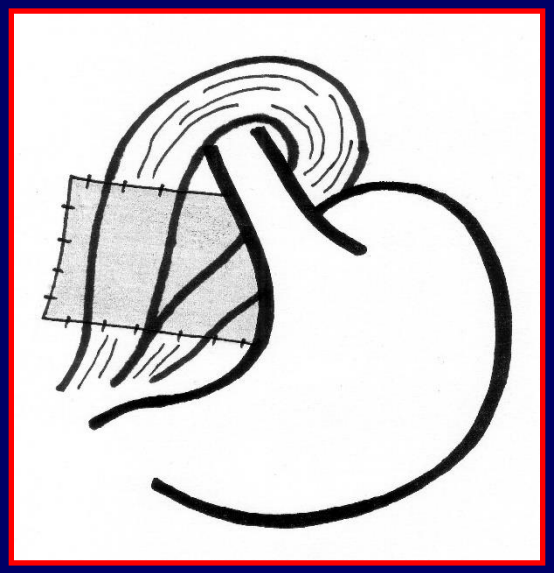
- Powell et al., Surgical Endoscopy (2024)
- Klock et al., J. Gastrointest. Surg. (2023)
- Shiwani et al., Obesity Surgery (2023)
- Abdelmoaty et al., Foregut (2023)
- del Genio et al., Cirugía Española (2023)
- SAGES Guidelines (2022)
- Spurzem et al., Surgical Endoscopy (2024)

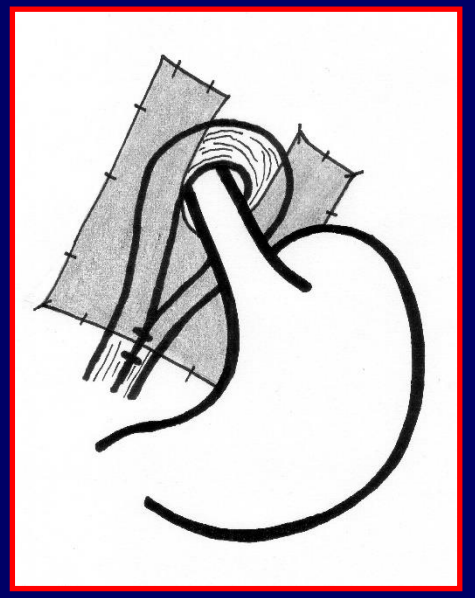
Operative Steps

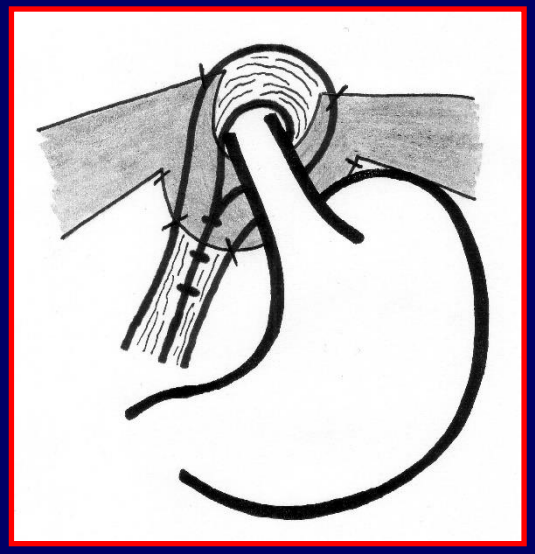
- Good exposure, triangulation
- Dissect the Crura
- Dissect the sac out of the mediastinum
  - always
- Complete the esophageal mobilization
- Repair crura
- Sleeve without GERD symptoms or RYGB

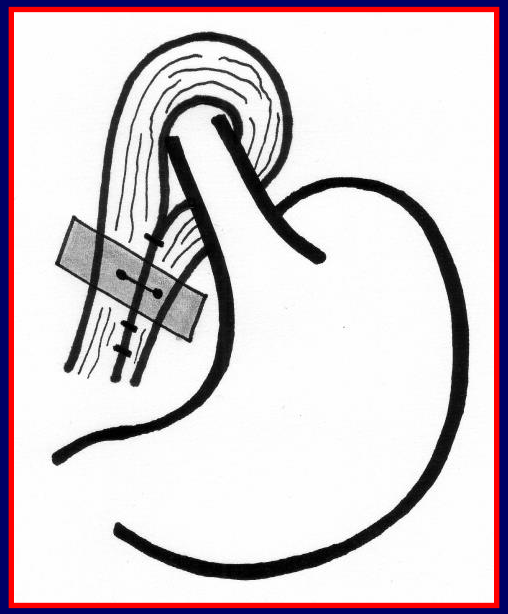
Prosthetic Mesh at Hiatus

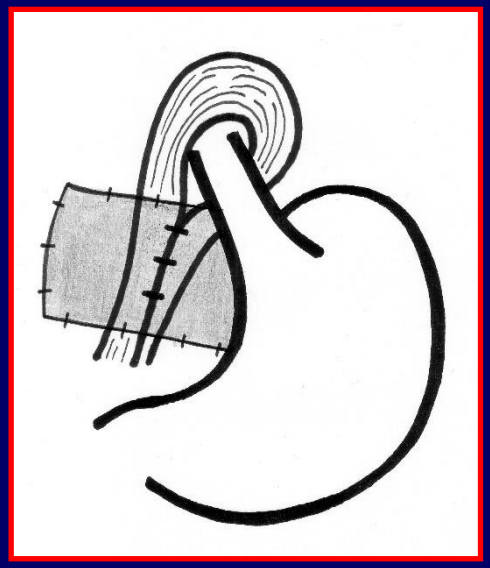












Recurrence is Irrelevant (its at least over rated)

- **Laparoscopic paraesophageal hernia repair: defining long-term clinical and anatomic outcomes.** Oelschlager BK, Petersen RP, Brunt LM, Soper NJ, Sheppard

- 2002 to 2005, 108 patients underwent LPHER .
- A standardized symptom severity questionnaire, SF-36 health survey, and upper gastrointestinal series were performed at baseline, 6 months, and during 2008-2009.
- **RESULTS:**
- Radiographic recurrence (≥ 20 mm) was 14% at 6 months and 57% at the time of follow-up, and the average recurrence size was 40 ± 10 mm.
- All symptoms were significantly improved at long-term follow-up and, with the exception of heartburn, were unaffected by the presence or size of the recurrence. Two patients (3%) with recurrent symptoms related to their hernia underwent reoperation.

Conclusions

- Indications for Repair are consistent, Paraesophageal component, and or symptoms
- Complete reduction of the sac with repair and fundoplication are standard
- Biologic or permanent prosthetics are used, but not widely praised and insufficient data to make recommendations
- Recurrence is common , but rarely requires reoperation
- Obesity is a risk factor, consider weight loss surgery