Safety and efficacy of Roux-en-Y gastric bypass as revisional bariatric surgery after failed anti-reflux surgery: a systematic review

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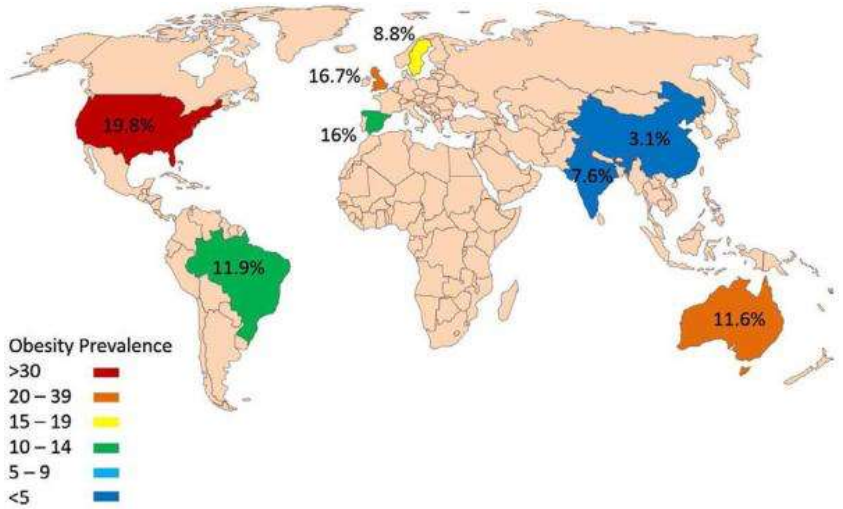
INTRODUCTION

The prevalence of obesity and gastroesophageal reflux disease (GERD) is increasing in parallel.

GERD is promoted by increased abdomino-thoracic pressure gradient and therefore affects a large proportion of patients with obesity.



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REVIEW ARTICLE

Evidence-based clinical practice guidelines for gastroesophageal reflux disease 2021

- The initial treatment of GERD consists of:
- Proton pump inhibitor (PPI) for NERD
- PPI or a potassium-competitive acid blocker (P-CAB) for mild RE
- P-CAB for severe RE, along with lifestyle modifications.
- <u>Indications for surgical treatment are:</u>
- PPI-resistant GERD
- The need for long-term maintenance therapy with PPI
- Extra-esophageal manifestations, such as asthma, hoarseness, cough, chest pain and aspiration caused by gastroesophageal reflux

In patients with both severe obesity and GERD, Roux-en Y Gastric Bypass (RYGB) is considered the surgical procedure of choice.

Is RYGB a good revisional surgical option after failed anti-reflux surgery?

Review > Surg Obes Relat Dis. 2023 Jun 8;S1550-7289(23)00567-1.
doi: 10.1016/j.soard.2023.05.028. Online ahead of print.

Safety and efficacy of Roux-en-Y gastric bypass as revisional bariatric surgery after failed anti-reflux surgery: a systematic review

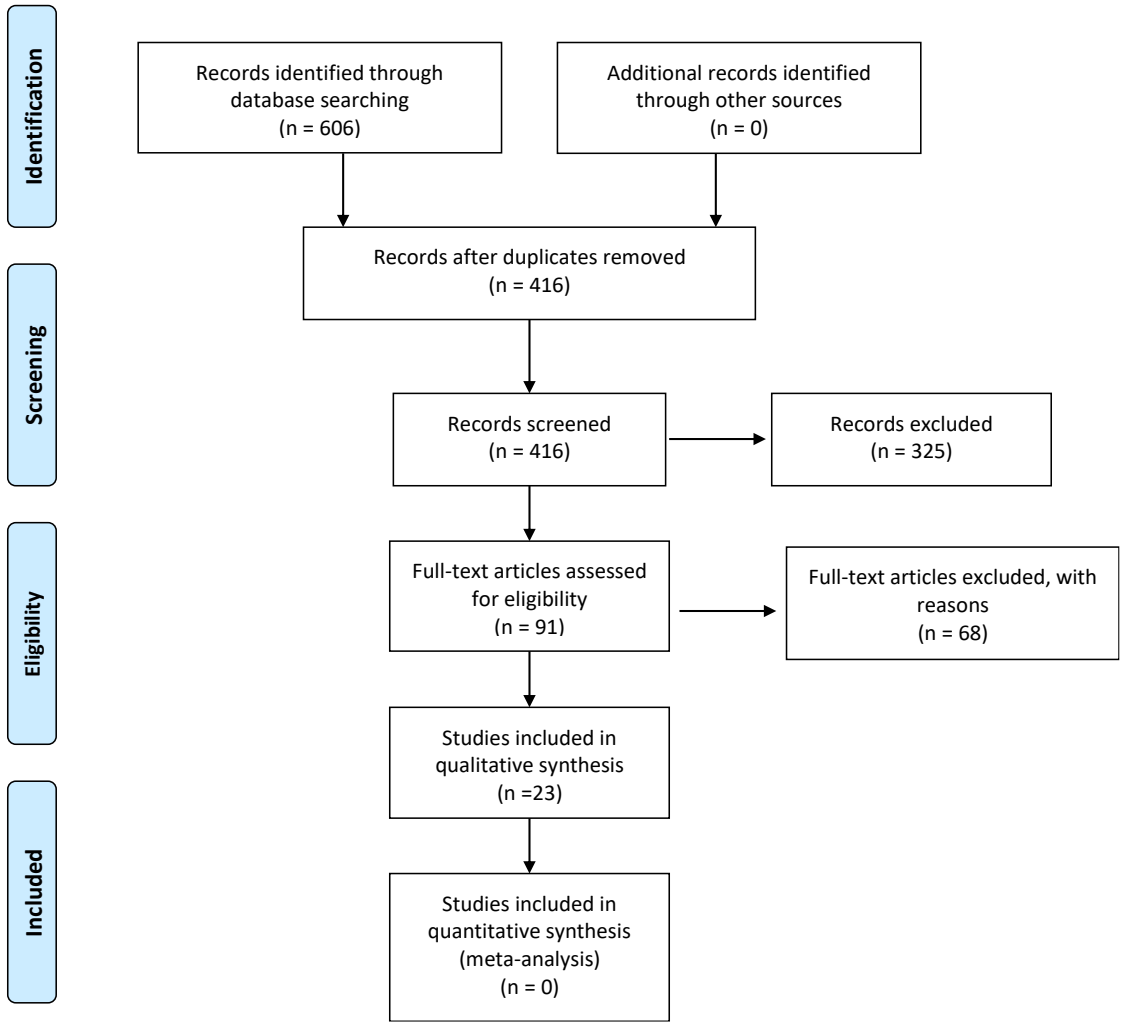
Sonja Chiappetta [1], Nadia de Falco [2], Panagiotis Lainas [3], Radwan Kassir [4], Rohollah Valizadeh [5], Mohammad Kermansaravi [6]

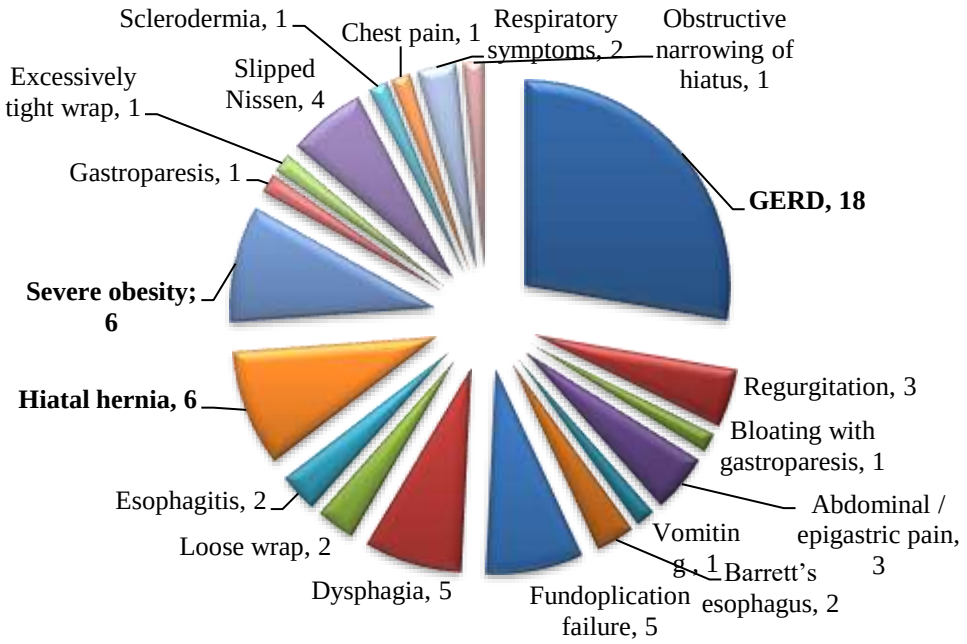
METHODS

- This systematic review was designed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.
- The PICO (Patient, Intervention, Comparison, and outcome) framework was patients with obesity after failed anti-reflux surgery, Roux-en-Y gastric bypass, healthy people and reflux.
- Of all articles (PubMed:260; Scopus:258; Web of Science: 88; total=606), after removing duplicates, 416 articles were eligible for screening

➢ Safety and efficacy regarding weight loss and anti-reflux outcome of Roux-en-Y gastric bypass after failed anti-reflux surgery.

PRISMA 2009 Flow Diagram: RYGB after failed anti-reflux procedures





Reasons for revision reported in eligible studies

Inclusion criteria for study selection

- Patients undergoing RYGB after failed surgical anti-reflux procedures
- All type of studies in English including case series, randomized controlled trials, prospective and retrospective cohort studies.

Exclusion criteria

- Studies with unclear results
- Case reports
- Animal studies

N° Studied	23
Patients	874
Mean Age	52,86 ± 4,97 years
Anti-reflux surgical procedures	Nissen-fundoplication (16), not mentioned (7).
Concomitant hiatal hernia repair during primary surgery	3 studies
Mean BMI at revision	37,56 ± 5,02 kg/m^2
Mean % EWL	69.74%
Delta BMI	10,41 kg/m2
Interval to failure/revision	5,58 ± 2,46 years

- Upper endoscopy at revision was performed for all patients.
- Esophageal manometry and Ph monitoring were reported in 6 and 4 studies, respectively

RESULTS

- Recurrence of reflux symptoms after initial fundoplication was reported to be 12.2% and 12.6% in 2 studies, and 39.7% in three studies (mean: 21.5%).

➢ Mean improvement rate of symptoms was 92,62%.

➢ Mean follow-up was reported in 20 studies and was 25.64 ± 16.59 months.

- Perioperative complications (up to 30 days), demonstrating that leak, anastomosis stricture and ventral hernia, were the three most common complications reported.

➢ The rate of perioperative complications was 16.7%.

Perioperative complications	N	Perioperative complications	N
Gastrojejunostomy/ anastomotic stenosis	30/874 (3.43%)	Anastomotic ulcer	3/874 (0.34%)
Gastrojejunostomy/ anastomotic leakage	22/874 (2.51 %)	Atelectasis	2/874 (0.22%)
Ventral hernia	16/874 (1.83%)	Gastrointestinal hemorrhage	2/874 (0.22%)
Small bowel obstruction	12/874 (1.37 %)	Pulmonary embolism	2/874 (0.22%)
Gastrojejunostomy/ anastomotic hemorrhage	8/874 (0.91 %)	GERD	1/874 (0.11 %)
Dehydration/malnutrition	7/874 (0.80%)	Persistent gastroparesis	1/874 (0.11 %)
Surgical site infection	6/874 (0.68%)	Small bowel pneumatosis	1/874 (0.11 %)
Pneumonia	5/874 (0.57%)	Dysphagia	1/874 (0.11 %)
Gastric perforation	4/874 (0.45%)	Ileus	1/874 (0.11 %)
Dumping syndrome	4/874 (0.45%)	Esophageal perforation	1/874 (0.11 %)
Marginal ulcer	4/874 (0.45%)	Abdominal compartment syndrome	1/874 (0.11 %)
Cholelithiasis	3/874 (0.34%)	Gastric remnant herniation	1/874 (0.11 %)
Sepsis	3/874 (0.34%)	Nausea/vomiting	1/874 (0.11 %)
Duodenal diverticulum perforation	3/874 (0.34%)	Mortality	1/874 (0.11 %)
Total perioperative complications: n = 146/874 (16.7%)			

- A benefit-risk analysis should always be performed prior to surgery and patients should be informed about the higher perioperative risk when converting the failed anti-reflux procedure to RYGB compared to re-fundoplication.

- A GERD improvement rate of 92.16% and a mean %EWL of 69.74% are acceptable outcomes, since two chronic diseases get treated with one surgery.

An intensive preoperative workup and an inclusion of preventive strategies during surgery, like for example intraoperative endoscopy and the use of Indocyanine Green Fluorescence Imaging might be important strategies to reduce the risk of leak and stricture.

DISCUSSION

RYGB as a bariatric and metabolic surgery leads to weight loss and improvement of associated comorbidities.

- The characteristics of patients in the different studies include obesity associated comorbidities, such as arterial hypertension, diabetes mellitus type 2, hyperlipidemia and obstructive sleep apnea syndrome.

- Providing a surgical treatment option after failed anti-reflux surgeries, which include treatment of GERD, obesity and associated comorbidities might be the best surgical approach in this cohort of patients.

The main limitation of this systematic review is data heterogeneity in the current literature.

- In the analyzed studies, no standard preoperative work-up has been performed and ph-metry and manometry were not always performed.
- The parallelism of GERD and obesity and the different causes of indication for revision might affect outcomes.
- Weight loss and quality of life after revisional RYGB in the long-term is not reported.
- Gerd resolution in quite all studies is mainly reported by clinical symptoms and not by structured diagnostic follow-up

Nevertheless, this is the first systematic review which addresses the outcome of RYGB after failed anti-reflux surgery, including a total of **874** patients.

CONCLUSIONS

- ✓ Conversion of failed anti-reflux surgery to RYGB might be an efficient revisional procedure regarding improvement of GERD and weight loss in patients presenting with obesity, hiatal hernia and/or GERD after primary anti-reflux surgery, with a mean improvement rate of GERD symptoms with 92.16% as reported by studies.
- ✓ Perioperative complications had a prevalence of 16.7% and included mostly leakage, stenosis and ventral hernia.

RYGB might be an efficient surgical treatment option in failed anti-reflux procedures, but should be performed in experienced centers for selected patients, since the rate of perioperative and long-term complications must be minimized.

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