Mini Medical School: **Bariatric Surgery** Elizabeth McCarthy, MD









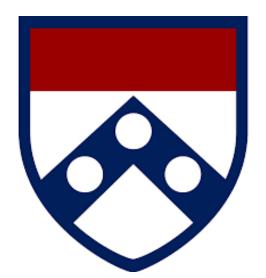






A Little Bit About Me









What will we learn today?

- What is bariatric surgery and what diseases does it treat?
- What are the types of bariatric surgery?
- How does one prepare for bariatric surgery?
- What are the outcomes of bariatric surgery?



What is bariatric surgery?

- Procedures not only help with weight loss but are also effective in sleep apnea, and high cholesterol

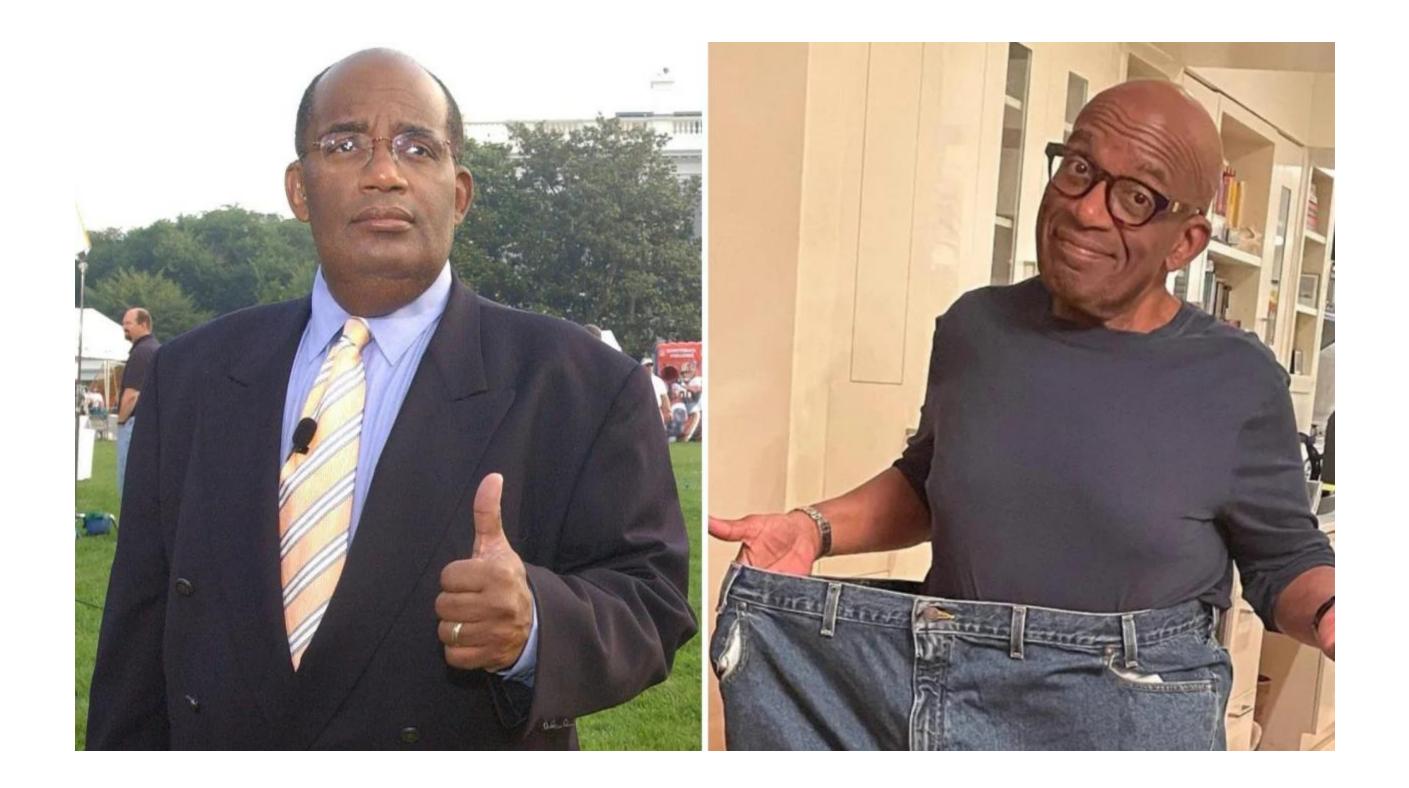
Surgery of the gastrointestinal tract to improve obesity and metabolism

treating other common health issues: diabetes, high blood pressure,





Bariatric Surgery in the Media









Why bariatric surgery?

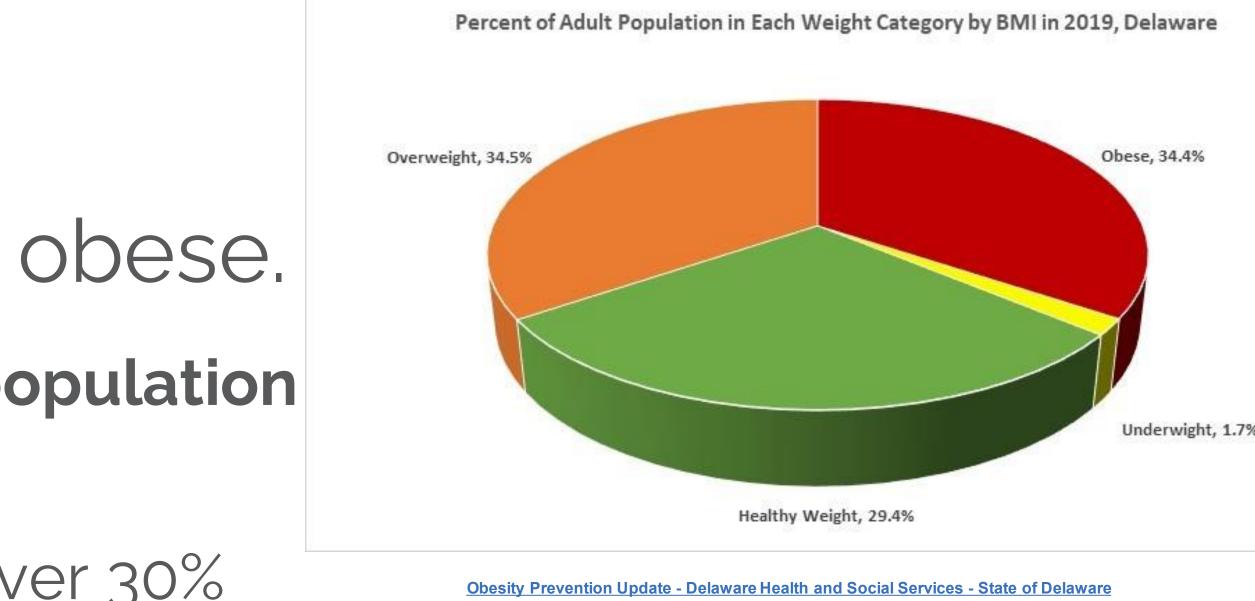






What is obesity?

- Disease of excessive fat accumulation.
- 42.4% of Americans are obese.
 - In Delaware over 1/3 if the population is obese
 - Pennsylvania and Maryland over 30%
 - New Jersey over 25%







What is "morbid obesity?"

- 100 lbs. over ideal body weight.
- Body Mass Index (BMI) of 40 or above.
- Also known as clinically severe obesity.







BMI >40

Or

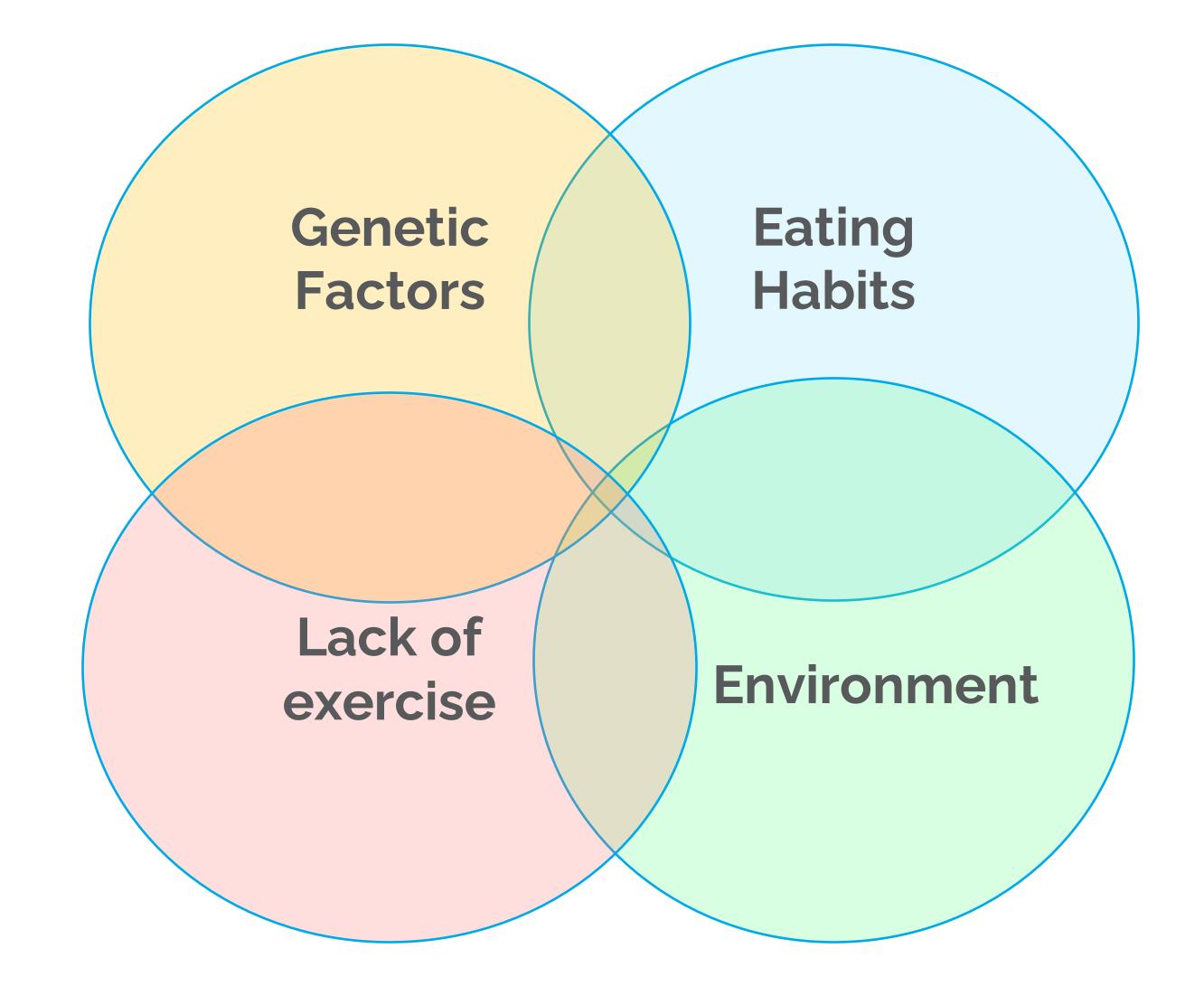
- BMI >35 with a comorbidity
 - Diabetes
 - High blood pressure
 - Sleep apnea

Who qualifies?

ChristianaCare®



What Causes Obesity?









Dangers of Obesity

Pulmonary Disease

Abnormal Function Obstructive Sleep Apnea Hypoventilation Syndrome

Non-alcoholic **Fatty Liver Disease**

Steatosis Steatohepatitis Cirrhosis

Gall Bladder Disease

Gynecologic Abnormalities

Abnormal Menses Infertility Polycystic Ovarian Syndrome

Urine leak **Osteoarthritis**

Gout



Idiopathic Intracranial Hypertension

Stroke

Cataracts

Coronary Disease Diabetes

Dyslipidemia Hypertension

Severe Pancreatitis

Cancer

Breast, Uterus, Cervix, Colon, Esophagus, Pancreas, Kidney, Prostate

Phlebitis

Venous Stasis Blood Clots



10-41% increase







- Diet and lifestyle modifications
- Medications
- Surgery

Options for Weight Loss





Weight Loss without Surgery

- Multiple diets to follow: Herbalife, Jenny Craig, Weight Watchers, Atkins, South Beach, Mediterranean, intermittent fasting...
 - Usually see about 1-2% weight loss long term
- Medications: Wegovy, Ozempic, Mounjaro, Buproprion/Naltrexone, Qsymia (phentermine/topiramate)
 - Can see up to 15% weight loss





What's all the hubbub about? Weight Loss Medications

- Everyone is talking about Ozempic!
 - GLP-1 receptor agonist
 - Increases pancreatic insulin release
 - Stops liver from making sugar
 - Delays stomach emptying

https://www.ozempic.com/



Mindy Kaling's Abs Slayed The Oscars "Red" Carpet In These Photos (womenshealthmag.com)







Weight Loss After Surgery

- Expected excess weight loss after 2 years
 - Bypass: 61.4-79.8%
 - Sleeve: 60.8-77.8%
 - Switch: 65.1-69.4%
- Expected total weight loss after 2 years
 - Bypass: 21-37.4%
 - Sleeve: 23.4-34.1%
 - Switch: 33.8-36.7%

Alvarez R, Telem DA. Comparative Surgical Outcomes in Bariatric Surgery. The SAGES Manual of Bariatric Surgery; 2017. p 339-61.





Methods of Bariatric Surgery

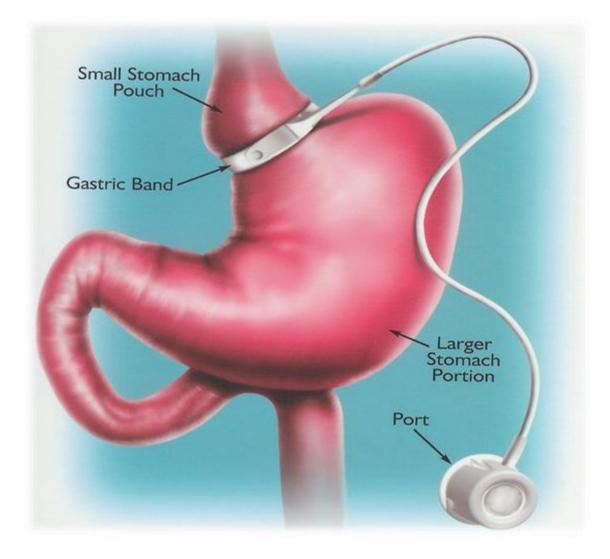
- Restrictive vs Malabsorptive vs Combination
- Adjustable gastric band
- Sleeve gastrectomy
- Gastric bypass
- Duodenal switch
 - BPD/DS or SADI





Adjustable Gastric Band

- Restrictive procedure
- Silicone inflatable band placed around the upper part of the stomach
- Has fallen out of favor due to long-term complications and questionable value











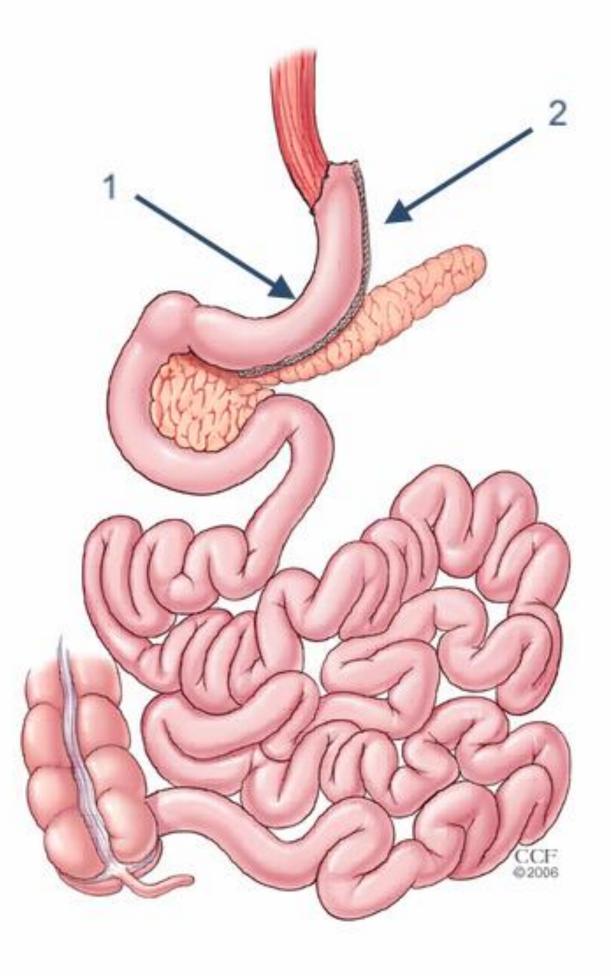
Removal of about 80% of the stomach

Includes the portion of the stomach responsible for the "hunger hormone": ghrelin

~60-65% excess weight loss

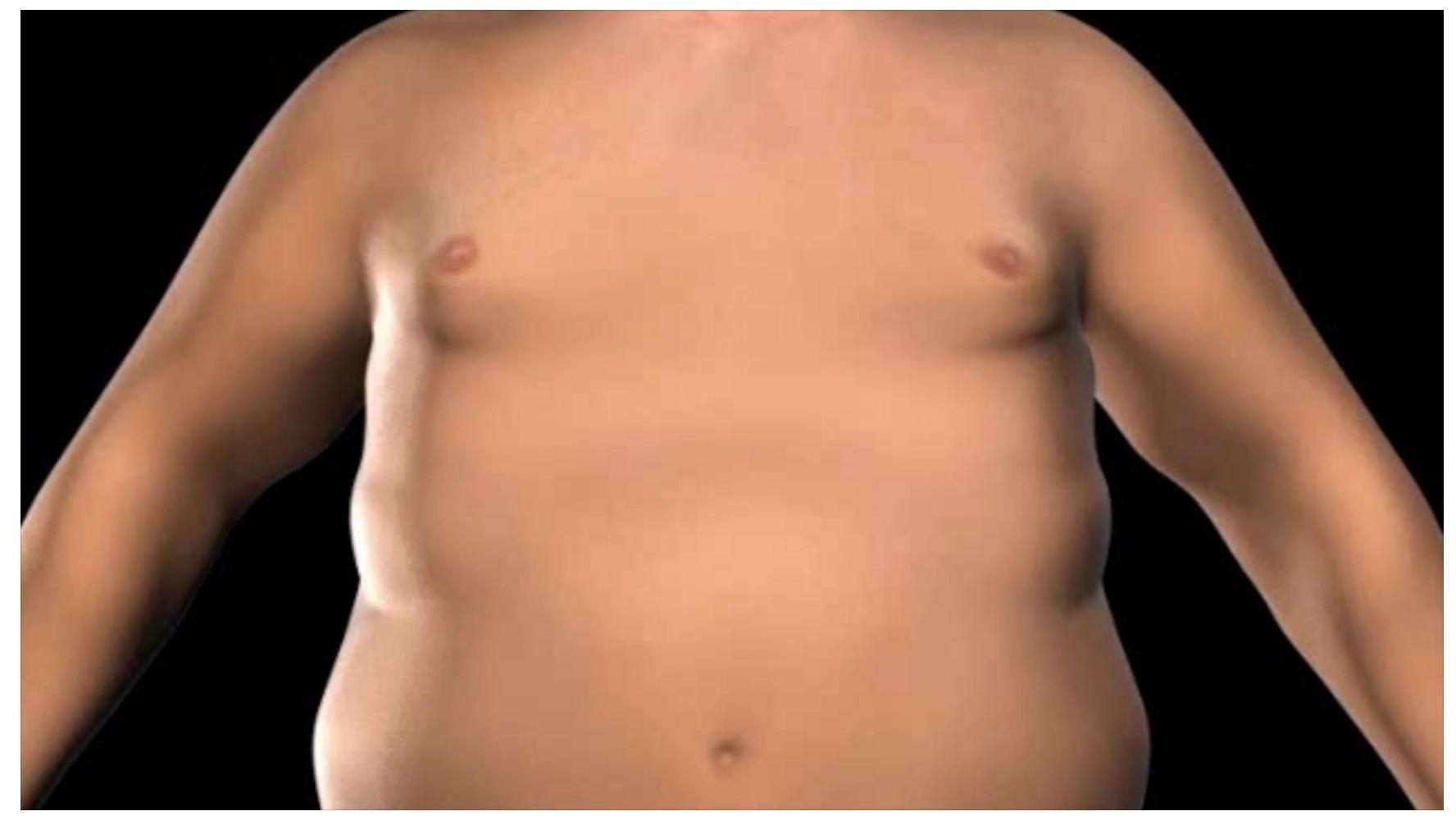
Most commonly performed bariatric surgery in the US and at Christiana

Sleeve Gastrectomy



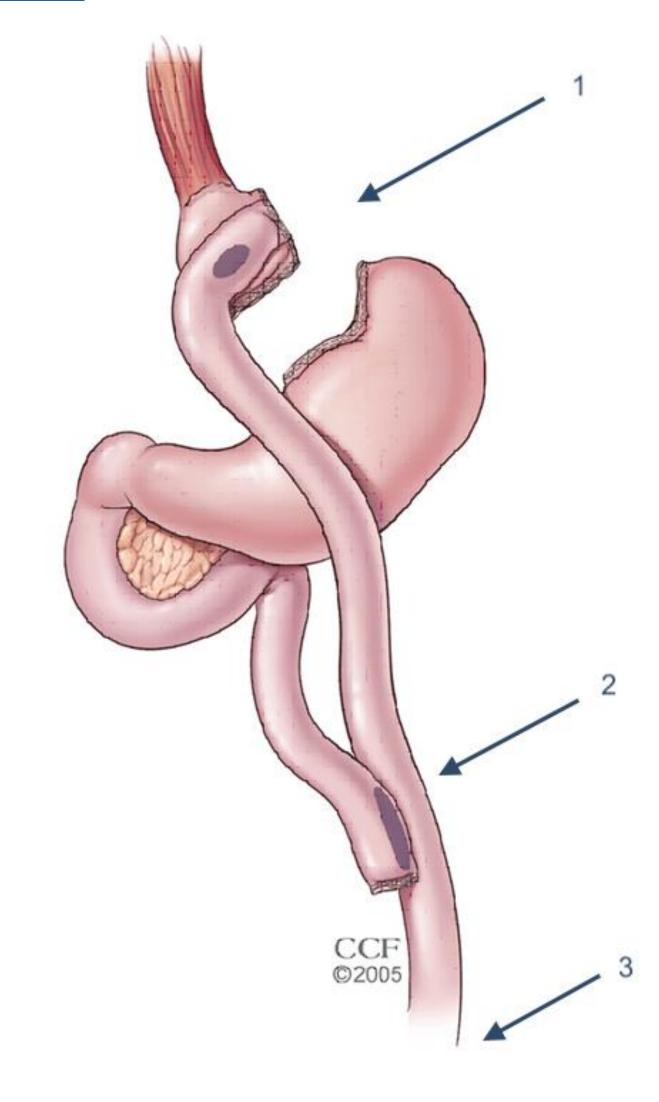








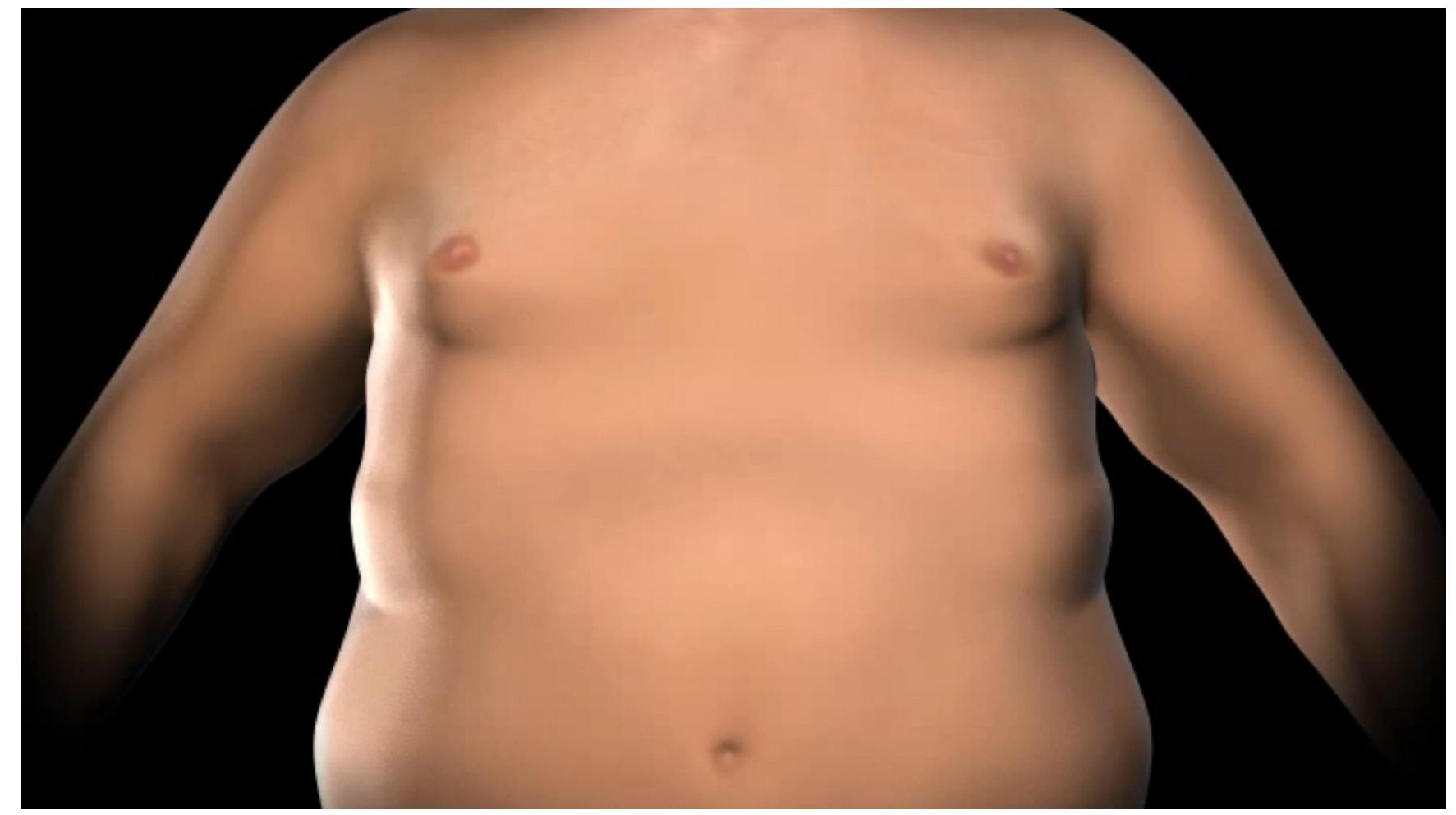
Gastric Bypass



- Creation of a "pouch"
- Re-routing of small bowel to "bypass" digestion and create an element of malabsorption
- Food flows from the stomach pouch into the lower intestines
- This is a combination procedure that is both restrictive and malabsorptive
- ~65-75% excess weight loss

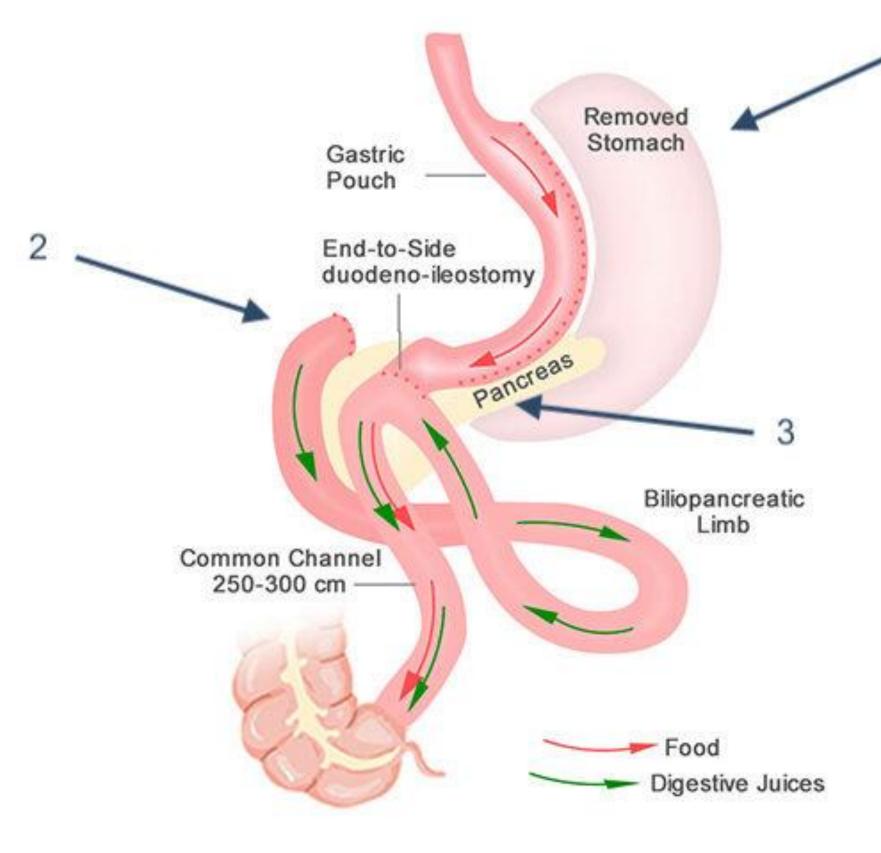








Duodenal Switch



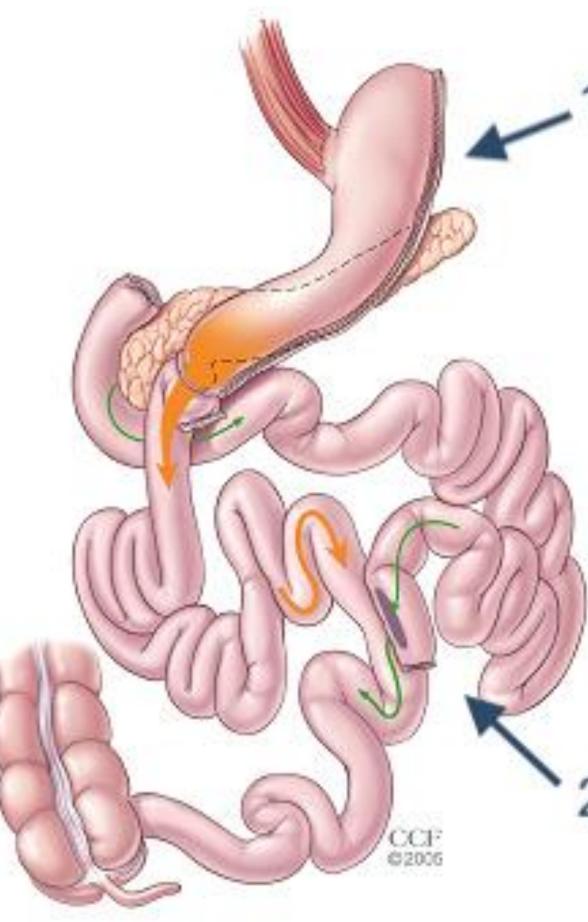
intestine

becoming more common

malabsorptive

65-80% excess weight loss

- Stomach reduced in size like sleeve gastrectomy with rearrangement of small
- A single anastomosis procedure is
- Like the bypass this is restrictive and















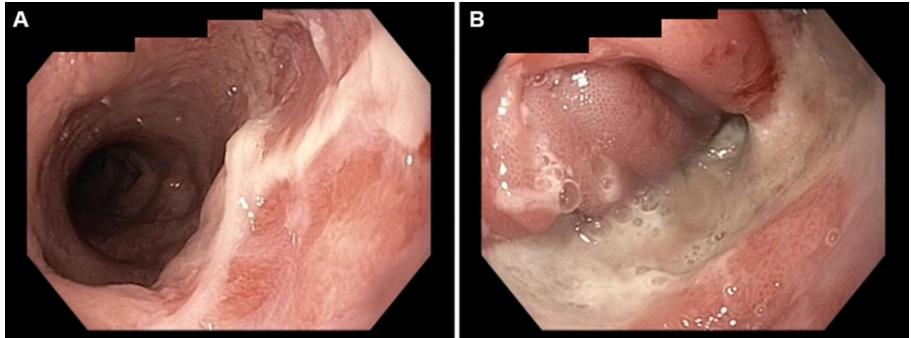
- Marginal ulcer
- Internal hernia
- Leak
- Blood clot
- Stenosis or stricture
- Dumping syndrome
- Vitamin Deficiency







- Can be seen in up to 16% of patients
- Associated with smoking, NSAIDs, steroids, large pouch size
- Presentation: upper abdominal pain, nausea, difficulty swallowing, vomiting
- Upper endoscopy



Tian, Y., Rogers, A.M. (2019). Marginal Ulcer: Diagnosis and Treatment. In: Docimo Jr., S., Pauli, E. (eds) Clinical Algorithms in General Surgery . Springer, Cham. https://doi.org/10.1007/978-3-319-98497-1_200

Marginal Ulcer

Edward Wang et al. BMJ Case Reports 2017;2017:bcr-2016-218829





Internal Hernia

- Can occur in up to 10% of patients
- Less likely now because of changes made to surgical procedure
- Need future surgery if this is discovered

McCarthy E, Jao SL, Pryor AD. Surgical Management of Bariatric Complications: Internal Hernia and Leak. In: Hawn MT et al (eds) Operative Techniques in Surgery. Wolters Kluwer. P393-397.

Docimo S. (2019). Acute Leak Following Bariatric Surgery: Endoscopic Stent Management In: Docimo Jr., S., Pauli, E. (eds) Clinical Algorithms in General Surgery . Springer,

Leak

- Can occur if up to 7% of patients
- Generally occurs early (<72 hours post-op)
- Can be fixed with endoscopy and stent placement





Dumping Syndrome

- Occurs in up to 12.6% of patients
- Occurs after ingestion of carbohydrate-rich foods
- shift and a sympathetic response including diarrhea, nausea, vomiting, palpitations, racing heart
- Early occurs within 20 minutes, late occurs up to 4 hours
- Protective??

Kane ED, Romanelli JR. Complications of Roux-en-Y Gastric Bypass. The SAGES Manual of Bariatric Surgery; 2017. p 403-429.

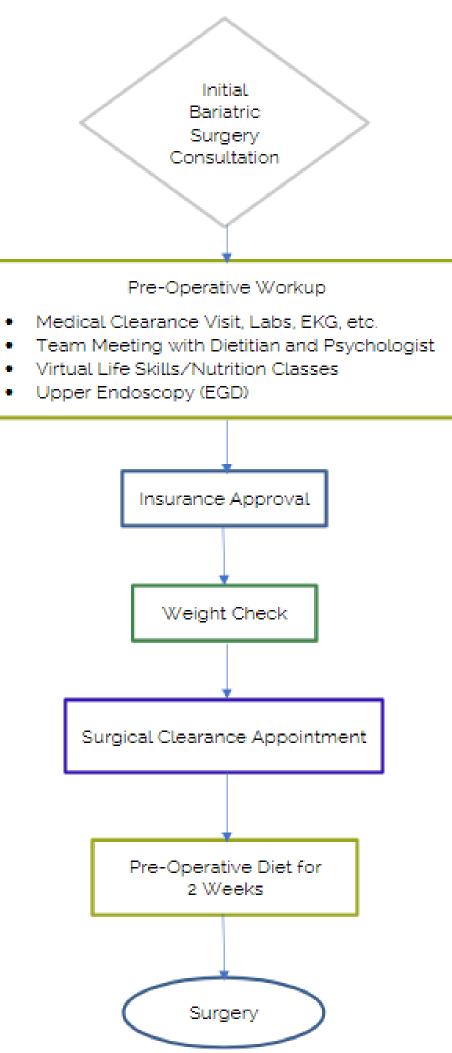
• Related to transit of large sugars in the jejunum causing a fluid





Pre-Operative Preparation

- Lengthy process
- Dictated by individual insurance companies









- Weight loss
- Comorbidity resolution
- Quality of life improvement

Post-Operative Expectations





Weight Loss After Surgery

- Expected excess weight loss after 2 years
 - Bypass: 61.4-79.8%
 - Sleeve: 60.8-77.8%
 - Switch: 65.1-69.4%
- Expected total weight loss after 2 years
 - Bypass: 21-37.4%
 - Sleeve: 23.4-34.1%
 - Switch: 33.8-36.7%

Alvarez R, Telem DA. Comparative Surgical Outcomes in Bariatric Surgery. The SAGES Manual of Bariatric Surgery; 2017. p 339-61.





Comorbidity Reduction

Condition	% Resolved or Improved
Type 2 Diabetes	92
Hypertension	75
Obstructive Sleep Apnea	96
Hyperlipidemia	76

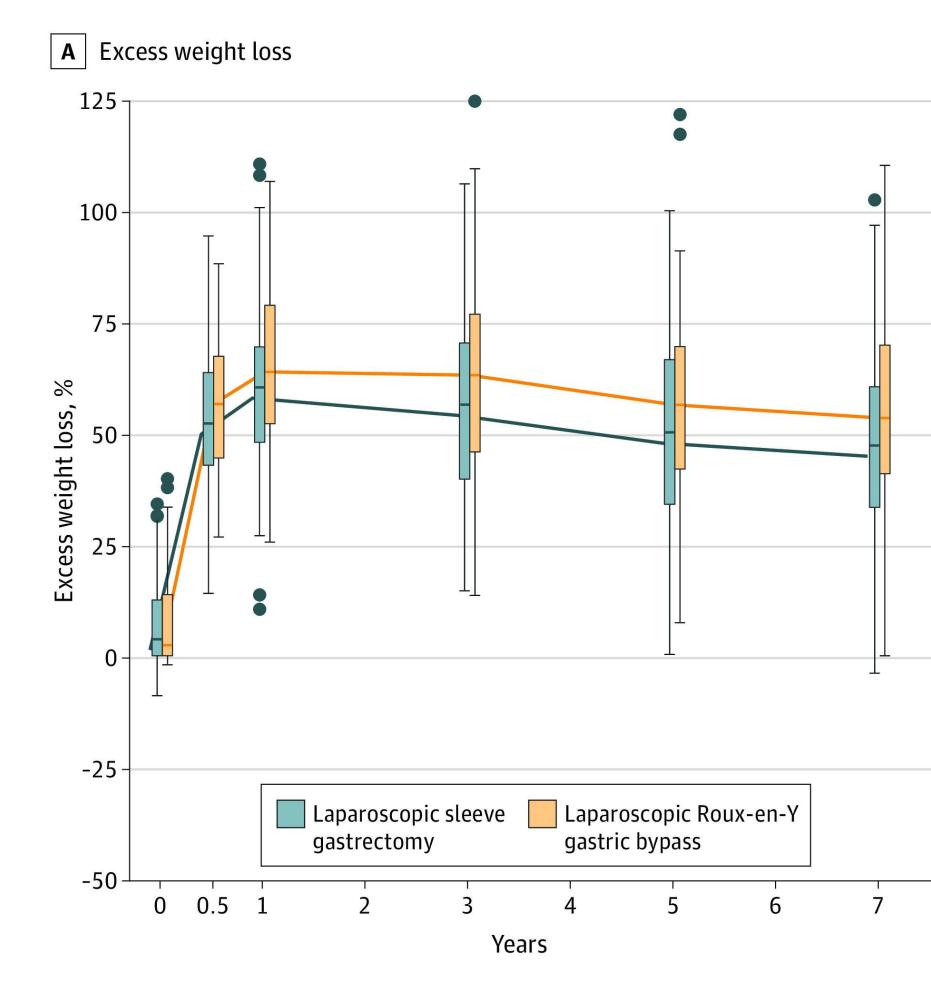
https://asmbs.org/resources/metabolic-and-bariatric-surgery

Depression 55% resolved Obstructive Pseudotumor sleep apnea cerebri 74-98% resolved 96% resolved Asthma Dyslipidemia, hypercholesterolemia 82% improved or resolved 63% resolved Non-alcoholic fatty Cardiovascular liver disease disease 90% improved 82% risk reduction steatosis Hypertension 37% resolution 52-92% resolved of inflammation 20% resolution of fibrosis GERD Metabolic 72-98% resolved syndrome 80% resolved Type II diabetes mellitus ala. 83% resolved Stress urinary incontinence Polycystic 44-88% resolved ovarian syndrome 79% resolution of hirsutism 100% resolution of Degenerative menstrual dysfunction joint disease 41-76% resolved Venous stasis disease 95% resolved Gout . 72% resolved Quality of life Mortality CCF improved in 89% reduction in C2005 95% of patients 5-year mortality

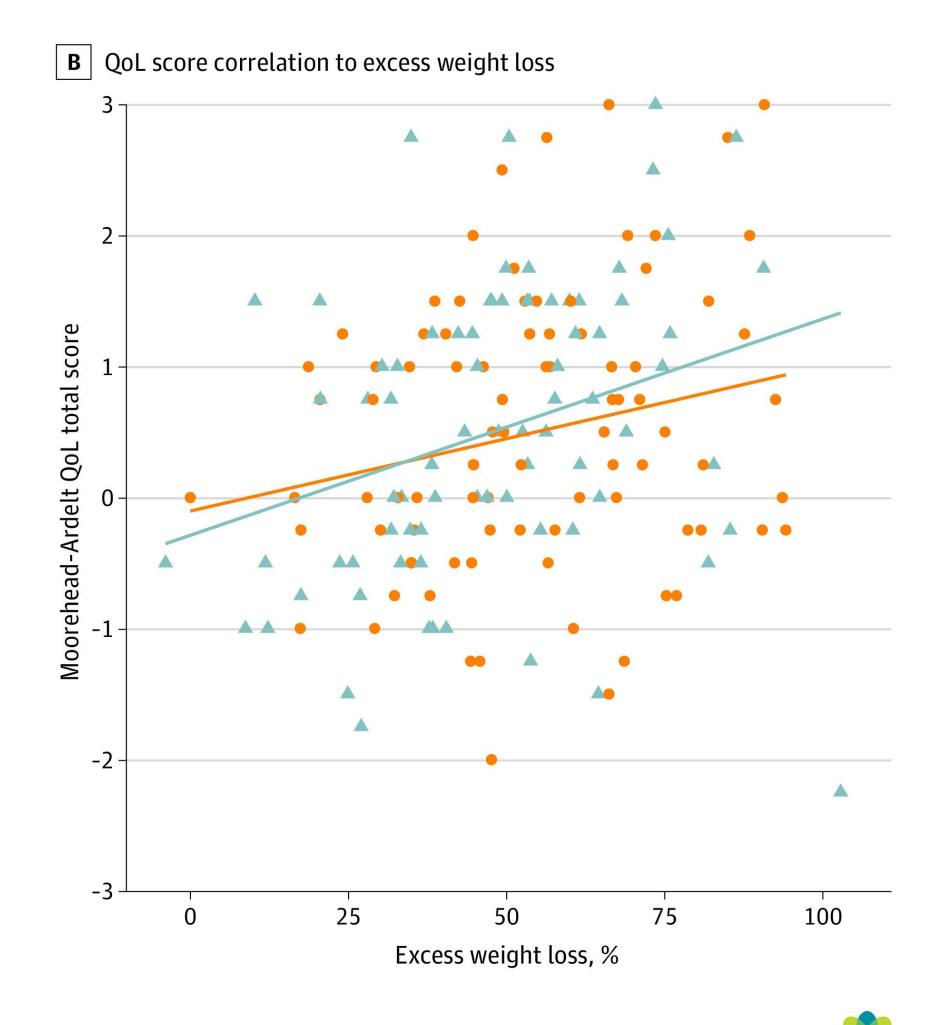




Correlation of % Weight Loss with Quality of Life Score



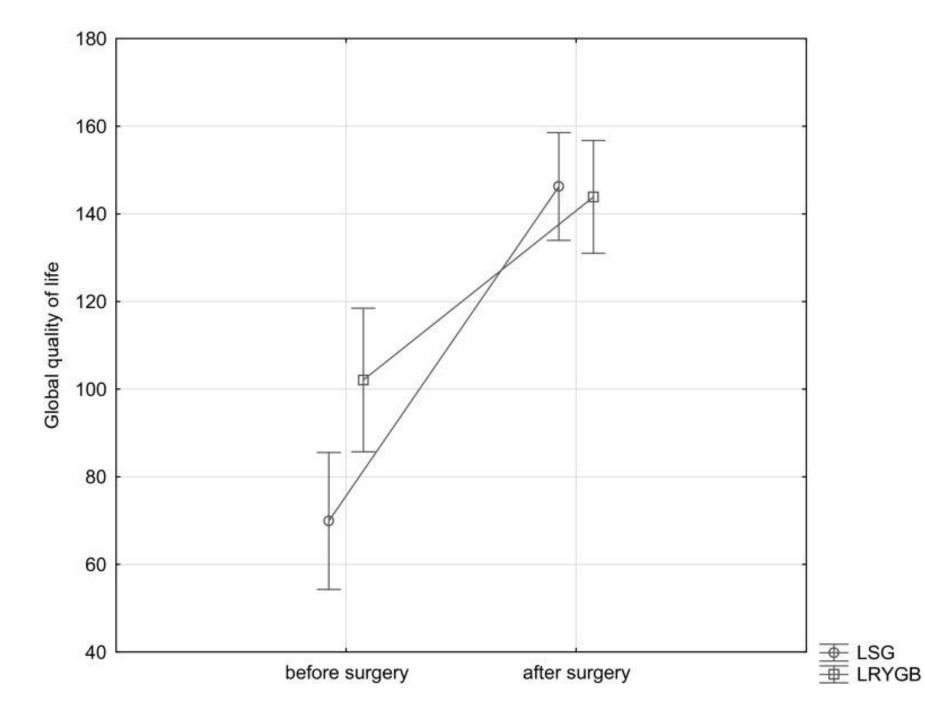
Roux-en-Y Gastric Bypass on Weight Loss and Quality of Life at 7 Years in Patients With Morbid Obesity: The SLEEVEPASS Randomized Clinical Trial. JAMA Surg. 2021 Feb 1;156(2):137-146. doi: 10.1001/jamasurg.2020.5666. PMID: 33295955; PMCID: PMC7726698.



Grönroos S, Helmiö M, Juuti A, Tiusanen R, Hurme S, Löyttyniemi E, Ovaska J, Leivonen M, Peromaa-Haavisto P, Mäklin S, Sintonen H, Sammalkorpi H, Nuutila P, Salminen P. Effect of Laparoscopic Sleeve Gastrectory Constrant Care

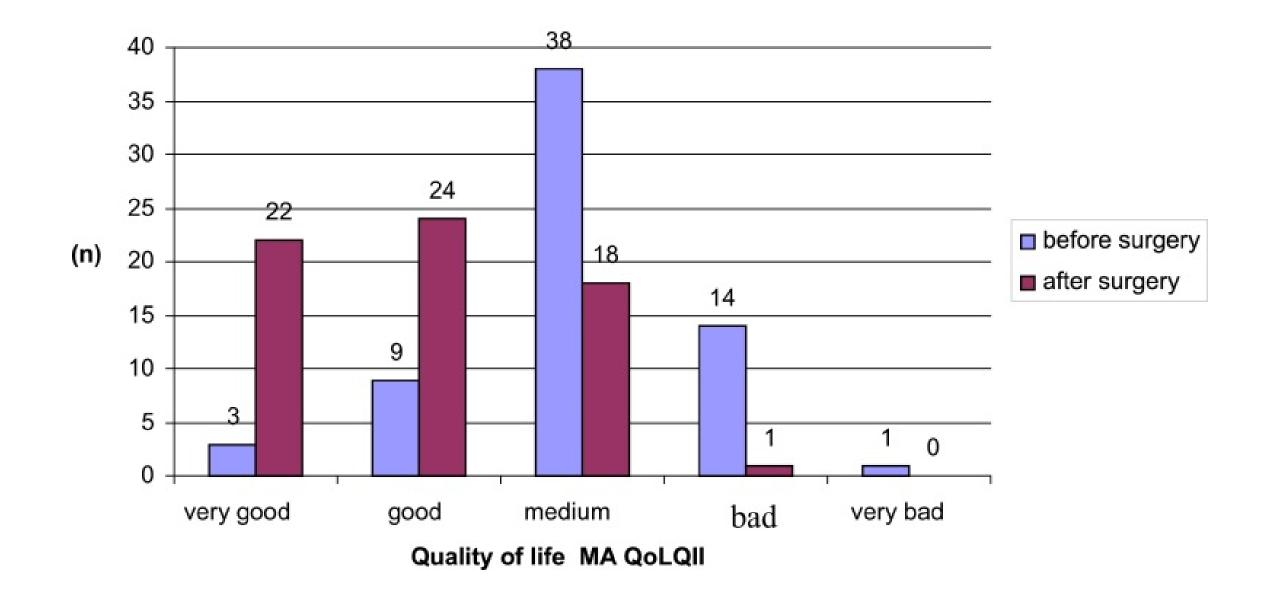


Quality of Life After Bariatric Surgery



The global quality of life in the group of patients post surgery, depending on the surgery type

Major P, Matłok M, Pędziwiatr M, Migaczewski M, Budzyński P, Stanek M, Kisielewski M, Natkaniec M, Budzyński A. Quality of Life After Bariatric Surgery. Obes Surg. 2015 Sep;25(9):1703-10. doi: 10.1007/s11695-015-1601-2. PMID: 25676156; PMCID: PMC4522031.



An analysis of changes in the quality of life pre- and post-surgery, as determined with the Moorhead-Ardelt Quality of Life Questionnaire II









The Most Important Perspective

Hearing from a patient....











