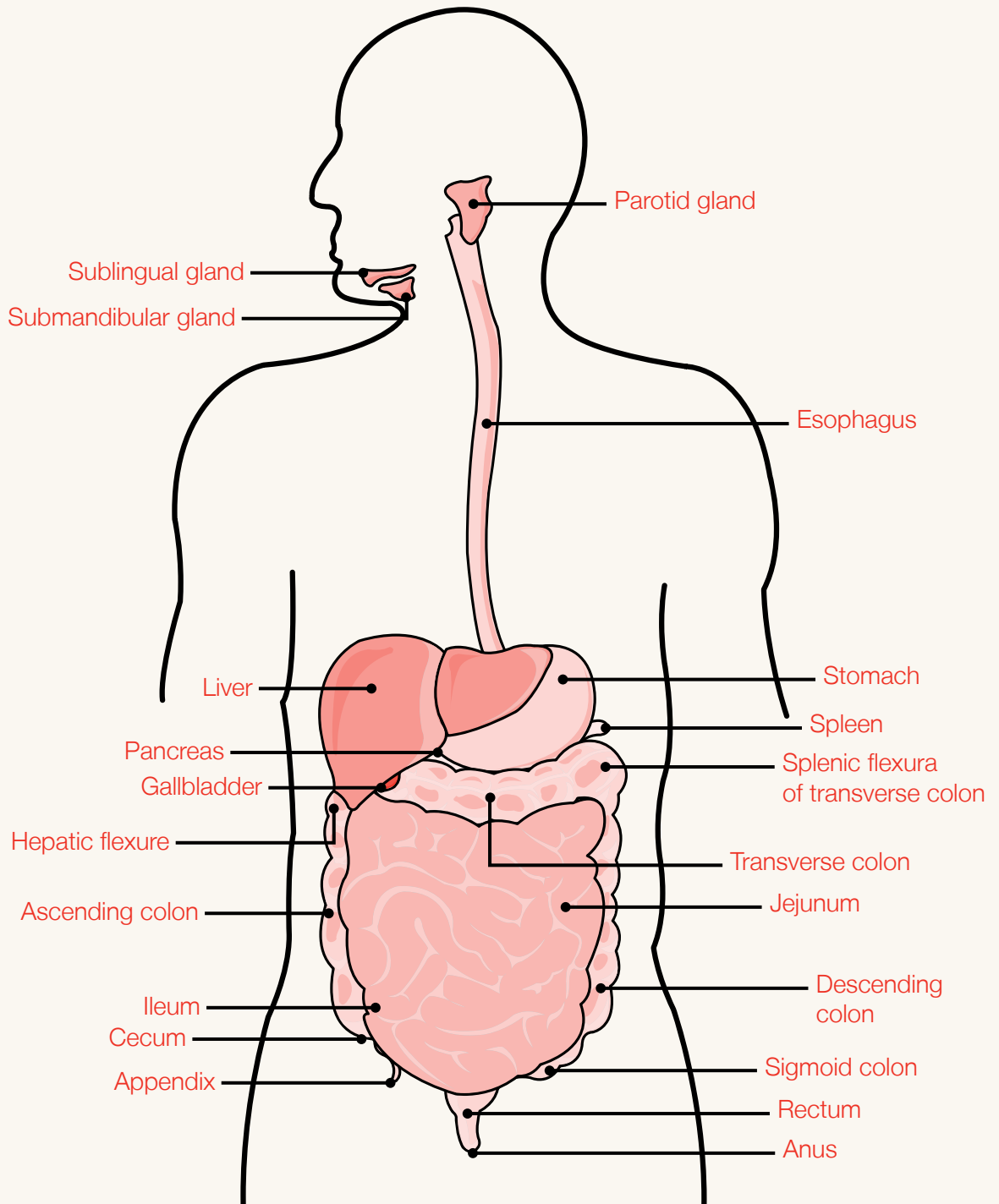


Bariatric Procedure

O V E R V I E W

Normal GI Tract



Bariatric Surgeries: Mechanisms of Action

1) Restrictive

2) Malabsorptive

3) Combination

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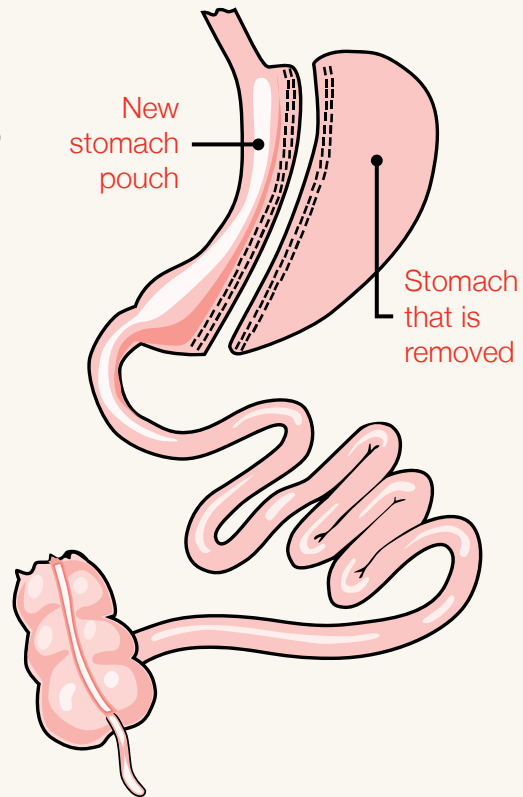
Laparoscopic Sleeve Gastrectomy

The stomach is divided vertically (up and down) by stapling. The portion of the stomach that is left is shaped like a very slim banana (or sleeve). The nerves to the stomach and the valve leading from the stomach to the small intestine remain intact, so the stomach works as usual. The small intestine is left alone.

Because a large piece of the stomach is removed, you will not be able to eat as much.

An ideal candidate for this surgery:

- ▶ Has a Body Mass Index (BMI) of 35–45
- ▶ Does not have GERD or Barrett's esophagus
- ▶ Exercises regularly
- ▶ Higher risk profile/extremes of age
- ▶ Adhesions/hernias
- ▶ A transplant candidate
- ▶ Stage procedure for risk reduction for Body Mass Index (BMI) > 50



BENEFITS

There are many benefits to having a sleeve gastrectomy. It is an easier surgery to perform, and usually takes only about 40 minutes. It also can be effective for people who had lap-band surgery and regained weight. Other benefits are:

- ▶ Good weight loss (After five years, most people have had 50–60 percent excess weight loss.)
- ▶ No implanted devices or connection site (anastomosis)
- ▶ Intestines remain intact and there is no bypass
- ▶ No marginal ulcers or internal hernias
- ▶ Causes favorable changes in gut hormones affecting long-term hunger and satiety (ghrelin)
- ▶ Low risk of dumping or diarrhea
- ▶ Option for patients with BMI > 50 as a staged procedure
- ▶ This procedure can be easily revised to another procedure, such as gastric bypass or duodenal switch.

RISKS

The risks of the sleeve gastrectomy are a leak, bleeding and obstruction due to long staple line. Also, there is limited information about how durable the surgery is after six years. This procedure is also irreversible and cannot be undone.

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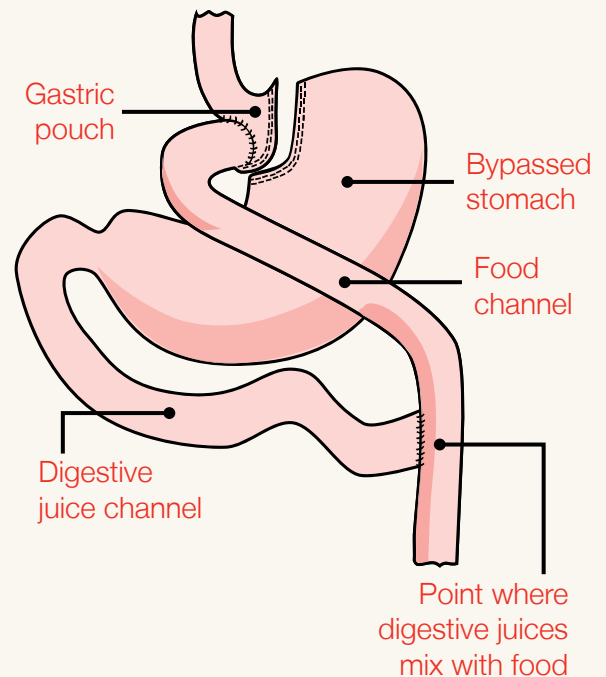
Laparoscopic Roux-En-Y Gastric Bypass

The Roux-en-Y bypass separates the stomach into two sections using parallel rows of staples. The small upper segment of the stomach (connected to your esophagus) will receive food just as it always has. The lower portion no longer receives any food.

Then, a piece of the small intestine is disconnected. The surgeon re-routes food directly from the newly-created small stomach pouch directly into the remaining intestine.

An ideal candidate for this surgery:

- ▶ Has a BMI of 35–50
- ▶ Has Type 2 diabetes (less than 10 years, and is not on insulin)
- ▶ Suffers from severe GERD
- ▶ Has Barrett's esophagus
- ▶ Is 18–65 years old
- ▶ Has not had previous stomach and lower GI/hernia surgery



BENEFITS

Roux-en-Y gastric bypass is the current “Gold Standard.” Generally, there is a lower risk of complications with excellent and durable weight loss (60–75% EWL). More than 70 percent of patients experience an improvement with diabetes or it goes away completely.

Roux-en-Y is durable long-term (40 years). The procedure is restrictive and malabsorptive.

RISKS

- ▶ Leaks, obstructions, bleeding
- ▶ Nutritional deficiencies
- ▶ More difficult to reverse
- ▶ Dumping syndrome (with increased intake of sweets)
- ▶ Long term complications, such as marginal ulcers/structures/internal hernias
- ▶ Recidivism (weight regain) 15–20%, with a higher rate for BMI greater than 50
- ▶ Changes anatomy

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Laparoscopic Duodenal Switch

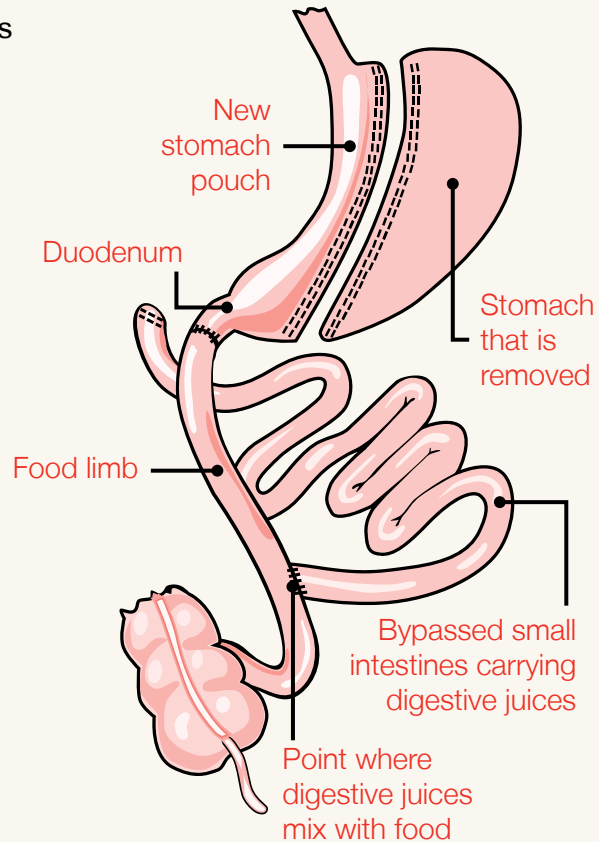
The duodenal switch rearranges the intestines so that you absorb fewer calories from food. It also makes your stomach smaller so you cannot eat as much. This procedure can be done in one or two stages.

During stage 1, the surgeon will first perform a vertical sleeve gastrectomy procedure.

During stage 2, typically 12–18 months after stage 1 procedure, the remaining part of the stomach is connected to the lower portion of the small intestine.

An ideal candidate for this surgery:

- ▶ Is 18–60 years old
- ▶ Has BMI above 50
- ▶ Has poorly controlled Type 2 diabetes
- ▶ Has high triglycerides
- ▶ Has metabolic syndrome



BENEFITS

- ▶ Greatest reduction in weight (> 80 percent EWL)
- ▶ Lowest weight-gain recidivism (< 10 percent)
- ▶ Can be staged procedure or revisional procedure for patients who had a band or sleeve that did not work
- ▶ Most effective in diabetes improvements (97 percent remission for patients)
- ▶ On insulin 5–10 years = 88 percent remission
- ▶ On insulin > 10 years = 66 percent remission
- ▶ Causes favorable changes in gut hormones affecting long-term hunger and satiety (ghrelin)
- ▶ Higher calorie consumption with greater weight loss

RISKS

- ▶ Highest surgical risk
- ▶ Longer surgery time (2.5 hours) and longer hospital stay (3 days)
- ▶ Highest risk for diarrhea
- ▶ Foul smelling stools/gas/diarrhea
 - Especially with sweets and/or fat
- ▶ Risk of excessive weight loss
- ▶ Protein/calorie malnutrition with poor compliance
 - Nutritional complications < 5 percent
- ▶ Greater malabsorption of vitamins/minerals
 - Risk of osteoporosis, risk to bone health

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Procedure Comparison

	GASTRIC BYPASS	SLEEVE GASTRECTOMY	DUODENAL SWITCH
% EWL	60 – 75%	50 – 66%	> 80%
Bleeding	1.5 – 5%	0 – 3.6%	0.5 – 2%
Leak	0 – 1.9%	0 – 2.3%	1 – 3%
Blood Clot	0.2 – 0.7%	0.5%	1 – 3%
Obstruction	0 – 3.4%	0 – 1.3%	1 – 2%
Death	0.3%	0.1%	0.5 – 1.2%

Most all patients have some degree of improvement in their weight-related comorbidities after bariatric surgery. Some also see a resolution or remission of those conditions (disease goes away completely). Resolution depends on severity of the disease, how long you have had the disease, types of medications used to manage the disease and genetic factors.

Resolution of comorbidities after bariatric surgery procedures

	GASTRIC BYPASS ¹ <i>(at 5–9 years)</i>	SLEEVE GASTRECTOMY ²	DUODENAL SWITCH ³
Type 2 Diabetes	70 – 84%	50 – 60%	95%
Hypertension	40 – 70%	50 – 60%	65 – 70%
Sleep Apnea	70 – 80%	70%	80 – 90%
Hyperlipidemia	62 – 80%	35%	75 – 90%
GERD (reflux)	> 90%	< 40%	< 40%

¹ SOARD 12; 2016. 1449–1456. ² SOARD 12 (2016); 1984–96 ³ SOARD 12 (2016); 1697–1705.

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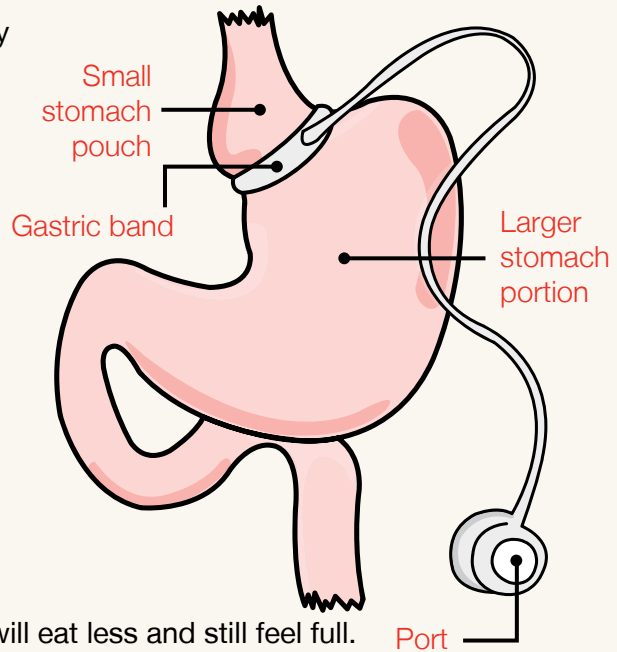
Laparoscopic Adjustable Gastric Band

Lap-band is often performed laparoscopically (with a very small incision) as an outpatient procedure. You may have a shorter hospital stay and faster recovery time compared to a traditional surgical incision.

The surgeon puts a silicone elastic ring around the upper part of your stomach. The ring is then filled with saline (saltwater) solution.

A tube attached to the ring is connected to a port under the skin of the abdomen. The saline is then injected or drawn out until the ring is tight enough around the opening from the upper stomach to the lower stomach.

Tightening the band decreases hunger. You will eat less and still feel full.



For the first year after surgery, the device has to be checked every month by a trained healthcare provider to see if adjustments need to be made.

An ideal candidate for this surgery:

- ▶ Is 18–60 years old
- ▶ Has BMI between 30–40
- ▶ Is active
- ▶ Is willing to follow instructions
- ▶ Is able to visit a provider for monthly checkups

BENEFITS

- ▶ Shorter operative time (easiest to perform)
- ▶ No change to anatomy
- ▶ Adjustable and/or reversible/removable
- ▶ Reduced risk for micronutrient deficiencies
- ▶ Shorter hospital stay (outpatient) and shorter recovery (return to work 1–2 weeks)
- ▶ Lowest risk for death (0.08%)
- ▶ Lower cost

RISKS

- ▶ Slower weight loss (three years), and lower overall weight loss (five years 25–50 percent EWL)
- ▶ Cheatable
- ▶ Problems with the device (port leakage, slipping, erosion)
- ▶ Nausea/vomiting/abdominal pain/GERD
- ▶ Esophageal and pouch expands
- ▶ 75 percent of patients require second operation
- ▶ Long-term tolerance is unsure
- ▶ Removal rate higher than 50 percent at 5 years; 75 percent at 15 years
- ▶ Multiple adjustments may be needed

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Endoscopic Bariatric Therapies

Intragastric Balloon

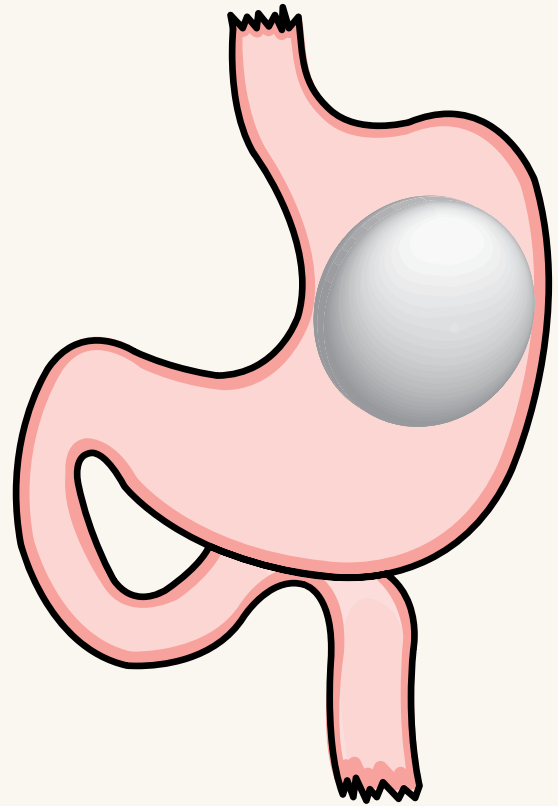
The intragastric balloon is temporarily placed endoscopically in the stomach for six months. It helps your body adapt to smaller portion sizes.

The balloon is inserted through the mouth into your stomach. The balloon is then inflated with saline and is about the size of a grapefruit. After six months, the balloon is removed endoscopically.

This therapy is used with diet, exercise and possibly medicines before, during and after the balloon.

Ideal candidate:

- ▶ Age 18–65
- ▶ BMI 30–40 with or without comorbidities
- ▶ No previous stomach or GI surgery
- ▶ Team approach



BENEFITS

- ▶ Outpatient procedure with sedation
- ▶ No incision or scar
- ▶ Easy to perform
- ▶ Faster recovery
- ▶ Safe
- ▶ Excess weight loss of 25 percent at 6 months post removal.

RISKS

This device may cause nausea/vomiting/abdominal pain/GERD. Although it is rare, there is a risk of: obstruction, perforation, aspiration pneumonia and death. The device intolerance is five percent, and the long-term durability is unknown.

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