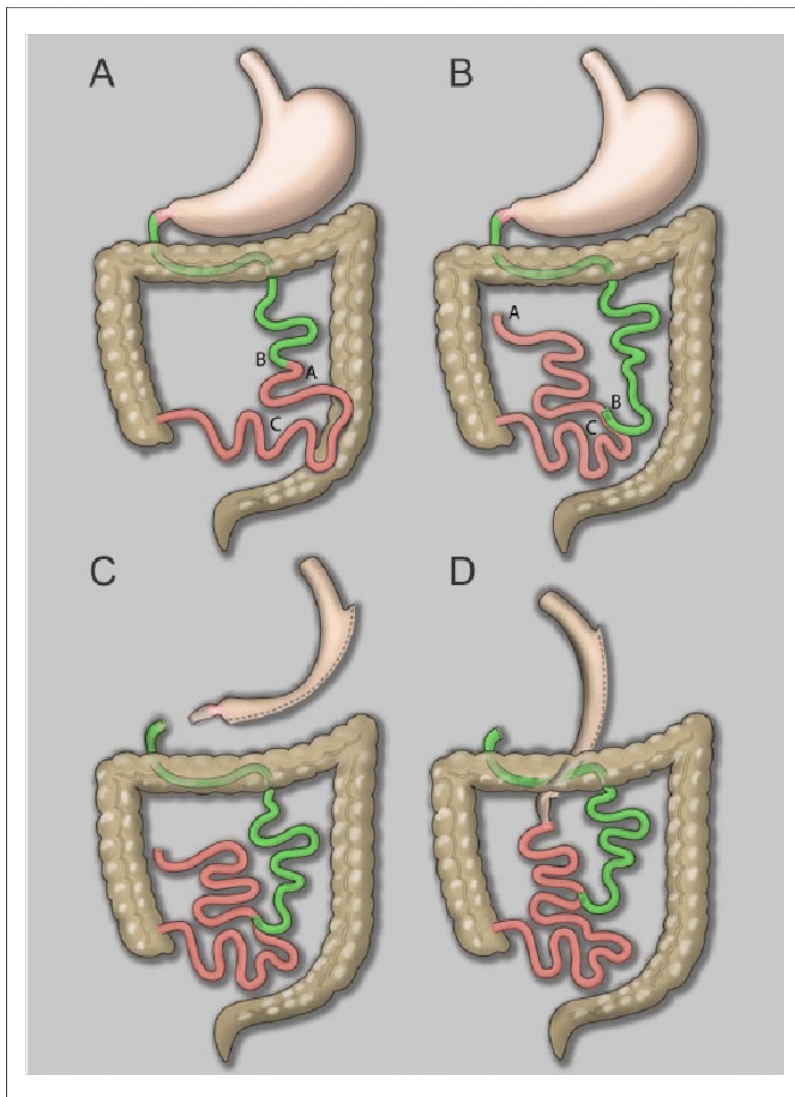


DS

The DS is an abbreviation that stands for a medical mouthful of incomprehensible words: Bileo-pancreatic diversion with duodenal switch and sleeve gastrectomy. We will explain what all this means. The DS is a procedure that has been around for 30 years. It consists of a sleeve gastrectomy and a bypass of some of the small intestine with two connections: one between the duodenum and the small intestine and one between two parts of the small intestine.

There are many reports about the success and safety of the surgery and many thousands of patients had the surgery in the US and worldwide. The surgery was endorsed by our professional organization many years ago and is a covered procedure for all health plans, if bariatric surgery is covered.



The surgery works in three ways.

- 1 The sleeve gastrectomy part creates a 2-3oz small stomach and as a result, a person cannot eat much. The eating portions are small.
- 2 The food will move from the new small stomach directly into the lower 10 feet of the small intestine and bypass the first part of the small intestine, which is about half of the small intestine. Normally, the small intestine that is available to absorb calories and nutrients is around 15 to 25 feet long. The result is that less of the calories are absorbed. The intestines are then cut and one part is implanted further towards the large intestine (colon). The result is, that at the end there are about 10 feet of small intestine, which absorb food, about 5 feet without the help of bile and about 5 feet with bile.
- 3 Certain hormones in the body are changed. The hunger hormone Ghrelin is reduced and most people after surgery will have no hunger for many months. Several hormones that regulate blood sugar are changed so that blood sugar is much better controlled. The DS is the best for diabetes treatment.

The advantages of the DS over the SADI-S, the sleeve gastrectomy or over the gastric bypass are:

- Better initial weight loss and better long-term weight loss than SADI-S, sleeve and bypass.
- Less chance that the weight will come back.
- Better diabetes treatment than SADI-S, sleeve and bypass.
- Much more stable blood sugar levels throughout the day than with sleeve and bypass.
- Less acid reflux than sleeve.
- Lower risk of internal hernia than gastric bypass.
- Lower risk of stomach ulcer than gastric bypass.
- Lower risk of abdominal pain than gastric bypass.
- Only one connection between structures in the abdomen rather than two in the bypass.
- Patients can take anti-inflammatory medications (NSAIDS).

Regarding the general surgical risks, they are the same as for SADI-S, sleeve gastrectomy and gastric bypass.

Disadvantages of the DS over the SADI-S, sleeve gastrectomy alone or over the gastric bypass are:

- More vitamin and mineral deficiencies than in the sleeve.
- 1-3 bowel movements per day in some people.
- Occasionally diarrhea so bad, that a surgery needs to be done to correct this.
- Occasionally vitamin/protein/nutrient levels are so low that a surgery needs to be done to correct this.
- A leak inside the abdomen happens with all three surgeries at a rate of 1-2 per 1000 patients. The DS leak at the connection between the duodenum and the small intestine

may be more difficult to treat than after gastric bypass. There is one more connection that could leak in the DS than the SADI-S.

Comparison of the four surgeries: Best/ 2nd best/ good/ least

- Weight loss initial DS /SADI / Bypass / Sleeve
- Weight loss long-term DS /SADI / Bypass / Sleeve
- Diabetes treatment DS /SADI / Bypass / Sleeve
- Daily blood sugar stability DS /SADI / Bypass / Sleeve
- HTN, Sleep apnea, heart DS /SADI / Bypass / Sleeve
- Reflux Bypass / SADI =DS/ Sleeve
- Sweet eaters Bypass=SADI=DS/ Sleeve
- High BMI DS /SADI / Bypass / Sleeve
- Ease of surgery Sleeve / DS=SADI=Bypass
- Ease of recovery All similar
- Can do normal endoscopy Only the Sleeve

Comparison of risks:

- Sleeve - more risk of worsening or new reflux and Barrett's and need to do Bypass or other surgery
- Sleeve - with risk of stomach stretching
- Bypass - with risk of stretching of stomach-intestine connection
- Bypass - more risk of internal hernia with intestine blockage, which requires emergency surgery than DS=SADI. No risk for Sleeve.
- Bypass - the only one with risk of stomach ulcer, pain and rupture at the stomach to intestine connection
- Bypass - more risk of inexplicable pain in the abdomen
- DS more than SADI more than Bypass have risk of low protein, anemia or nutrients (can be fixed with another surgery)
- Bowel movement: DS more than SADI could lead to loose and frequent 1-3 per day, more diarrhea (may need surgery to correct)
- Bowel movements: Bypass and Sleeve more constipation
- Need to follow up in the office with labs diligently: DS = SADI and Bypass more than Sleeve

