Why so much variations in sleeve gastrectomy techniques?

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Port Placements
GASTRIC BYPASS port placements

- (5mm) SURGEON: grasper
- (12mm) SURGEON: Ligasure / Endostitch
- (5mm hole – NO PORT)
  Nathanson liver retractor
- (5mm) ASSISTANT: 5mm camera
- (12mm) ASSISTANT: grasper
SLEEVE port placements

(5mm) SURGEON: grasper
(12mm) ASSISTANT: grasper
(15mm) SURGEON: Ligasure / Endostitch
(5mm hole – NO PORT)
Nathanson liver retractor
(5mm) ASSISTANT: 5mm camera
Know your terrain!

- The stomach is pushed up more in patients with “male” body habitus.
  - the ports need to be placed higher
  - the trajectory of your stapler will be more difficult

- Stomach size – to intraperitoneal space

- The pancreatic “bulge”
Proximal dissection around GE junction
Wide range of practice? But does it matter?

Preserve the angle of His area

Dissect out left crural pillar, but preserve the angle of His fibers

Dissect out left crural pillar and divide the angle of His fibers

Complete hiatal dissection

**Why?**
- avoid unnecessary dissection
- disruption of angle of His fibers
  - increase risk of reflux

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**Why?**
- minimize risk of proximal pouch dilation
- identify small hiatal hernias and fix them (missing them may increase risk of reflux)
Etiology of proximal fundus dilation

- Missing a hiatal hernia
- Missing a posterior gastric fold near cardiac region
- Difficult body habitus
  - central obesity
  - huge left hemi-liver
  - male gender
Dividing the gastroepiploic vessels on the greater curvature
Take the gastroepiploic vessels first \textit{or} perform the sleeve gastrectomy first?

- Exposure $\Rightarrow$ favor EV first

- Minimize risk of spiraling the sleeve $\Rightarrow$ ???

- Speed $\Rightarrow$ depends on which one you are comfortable with
Transecting the stomach (sleeve gastrectomy)
Bougie size
Choice of dilator and size

- Bougie (blunt-tip), Maloney (tapered-tip), or an EGD?
  - What YOU use may depend on
    1. who’s putting it in?
    2. Ease of insertion

- 30 Fr (EGD) → 60 Fr
  - Do you think this will be a definitive procedure or a staged procedure? (If latter, then err on larger size.)
  - How do you think the sleeve is supposed to work? Restrictive / portion control or decrease volume / increase transit to small bowel? (If latter, then sleeve should be tight enough to not dilate over time, but not so tight that you increase risk of acute narrowing.)
What do I use?

- 40 Fr Bougie

- **RATIONALE:** slightly larger than 32 Fr, but I make up for it by “hugging” the Bougie

- Also, if I need to convert to a gastric bypass, the gastric tube is not too thin for me to do a GJ anastomosis

**Recommendation 32 - 36 cm**  
(International SG Expert Panel 2012)
Where do I start?
6 - 8 cm from pylorus?
4 - 6 cm from pylorus?

KEEP IN MIND...
The closer you try to get to the pylorus with your staple fire, your stapler trajectory will get more challenging.
2 - 4 cm from pylorus?
How far from the pylorus do you start?

- **Range:** 4 – 8 cm (for most, 6 cm)

- The actual distance does not matter, it’s what tissue you need to remove.

- Use the (1) fundus/antral zone and (2) the incisura as reference points.

**TO LEFT OF THIS LINE:** pre-pyloric channel (sleeve-like)

**TO RIGHT OF THIS LINE:** antral/fundic tissue (floppy)
How far from the pylorus do you start? CONT

- Be careful of the dilator effect! *(esp in patients with sharp angularis)*

- The more acute the angle is, higher risk of reflux and possibly stricture / functional obstruction.
The diameter and the length of the pyloric antrum is highly variable.
• What is your belief on the importance of resecting the antral/pre-pyloric region?

- most common area of sleeve dilation is the antrum

- however, partial antrectomy is associated with higher post-op GERD

INCREASE RISK OF GERD INCREASE RISK OF WEIGHT REGAIN

2 CM 6 CM

Recommendation 2 – 6 cm
(International SG Expert Panel 2012)
Radical Resection of the Pyloric Antrum and Its Effect on Gastric Emptying After Sleeve Gastrectomy

David Michalsky • Petr Dvorak • Jaromir Belacek • Mojmir Kasalicky

Abstract

Background The surgical technique of laparoscopic sleeve gastrectomy (LSG) has not been fully standardized yet and there is the unresolved question of what is the optimum size of retained pyloric antrum. The aim of our research was to prove that even after a radical resection of the pyloric antrum the physiological stomach evacuation function can still be preserved.

Methods Our study was based on 12 patients, who were randomly divided into two groups. Patients undergoing radical antrum resection (RA group) underwent gastric emptying scintigraphy to determine the evacuation half-time (T1/2) and food retention in the 90th minute of the test (%GE) both before the operation and 3 months afterward. Patients in whom the antrum was preserved (PA group) served as a control group for comparison of postoperative weight loss (in kilogram), decrease in body mass index (BMI), and decline in excess weight (%EWL). The resulting changes were statistically processed.

Results In the RA group, the average time T1/2 declined from 57.5 to 32.25 min (p=0.016) and average retention %GE dropped from 20.5 to 9.5 % (p=0.073). Differences in the average values of weight, BMI, or %EWL between both groups were of no statistical significance (p>0.8).

Conclusions In the RA group, an increase in gastric emptying postoperatively was noted. Complications such as failure of stomach evacuation were not observed in the RA group. Our results suggest that even more radical resection of the pyloric antrum performed by LSG is possible without concerns of postoperative disorder of the stomach evacuation function.

2.5 cm vs 6 cm

No difference in wt loss at 1 yr
How tight do you like your sleeve?
How big is your Bougie?

28 Fr

60 Fr

INCREASE RISK OF STRicture

INCREASE RISK OF SLEEVE DILATION

INCREASE RISK OF REFUX?

BETTER WEIGHT LOSS (or is it?)

Recommended bougie size is 32-36 Fr (International SG Expert Panel 2012)
How close do you **hug** your Bougie? CONT

**Recommendation ???**
(International SG Expert Panel 2012)
Stapling technique
Stapling technique

• What is the quality of the stomach?

  - thick, leathery, less distensible?
    ➔ consider thicker loads, and hug the Bougie less

  - thin, friable, easily distensible?
    ➔ use thinner loads, and hug the Bougie more

  - redundant posterior stomach?
    ➔ take extra measures to make sure all redundancy is resected
Stapling technique CONT

- Variability of stomach thickness
  - First fire (4.5 mm stapler, Covidien Tri-Stapler BLACK load)
  - Subsequent fires (3.5 mm stapler, Covidien Tri-Stapler PURPLE load)

- Angle subsequent fires to incorporate the apex of the previous staple line
Stapling technique CONT

• “Hugging” the Bougie right
  - position and sit the stapler at the apex of last staple line

The assistant’s grasper goes underneath and creates a passage while holding the redundant posterior wall of the stomach to the right.
Stapling technique CONT

- “Hugging” the Bougie right
  - position and sit the stapler at the apex of last staple line
  - the assistant then pulls out the redundant part of the stomach laterally to get the stapler to “hug” the Bougie
Stapling technique CONT

- Avoid zig-zagging the staple fires during the resection of the stomach
  - AP orientation
  - lateral orientation

- Does it matter???
Stapling technique CONT

- Leave some fundus near of angle of His (1 cm).
- But don’t miss the posterior gastric fold or a hiatal hernia!
Stapling considerations CONT

- Staple line reinforcement?

  **Which one do I use?**
  COVIDIEN Duet
  COOK MEDICAL Biodesign
  GORE Seamguard
  SYNOVIS Peri-strips

- **Claim to fame** ➔ decreases bleeding and leaks ➔ faster operative times, decreased length of stay, and improve patient outcome

- **Why do I use it?** Easier to manipulate/grasp the stomach, easier to put on surgical clips, easier to inspect staple lines, and hopefully ALL OF THE ABOVE.
Stapling considerations CONT

- **Staple line reinforcement? CONT**
  - **Claim to fame**
    1) decreases bleeding and leaks
    2) faster operative times
    3) decreased length of stay
  
  - **Why do I use it?**
    1) easier to manipulate/grasp the stomach (minimize tissue trauma)
    2) easier to inspect staple lines
    3) easier to place surgical clips and can serve as a pledget when oversewing
Hiatal Hernia Repair
How and why I do it

• Routine 360° hiatal hernia dissection
  - to identify and fix small / occult hiatal hernias
  - mobilizes the proximal stomach so I can get my last staple fire within 1 cm of GE junction

• I do the dissection at the beginning of the case

• I fix the hiatal hernia AFTER the sleeve gastrectomy
  - posterior cruroplasty with 0-Surgidac, simple interrupted
  - use mesh if poor tissue quality