Endoscopy in the Post-bariatric Patient

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Normal Gastric Bypass Anatomy

Anesthesia Consult

Clinical Case

Disconnected Roux-en-O

52 yo, POD 5, with inability to tolerate PO, progressing to bilious emesis.
Complications

Anastomotic Ulcers

Strictures

Band Complications

Fistulae and Leaks

PB Limb / Gastric Remnant

Anastomotic Ulcers

Diagnosis

- EGD
- Pouch PH
- H pylori fecal antigen

Treatment

- Soluble PPI, sucralfate, remove contributory factors (NSAIDs, H pylori, tob)
- FB removal
- Surgery

Incidence: 0.6 – 16%

Most common source of delayed hemorrhage

Most common first 3 months postop

Etiology: acid, fistula, NSAIDs, H pylori, ischemia, FB reaction


Clinical Case

43 yo with RYGB in 2008
Admitted (Friday)
with severe pain of 2 wk duration
Pain resolved Sunday
EGD (Monday)
Clinical Case

Postoperative Hemorrhage

1.5% incidence of early post-gastric bypass hemorrhage

Slightly more common with laparoscopic approach

Small series looking at endoscopic treatment of acute postoperative hemorrhage

- Endoscopy in under 24 hours safe
- Source typically at staple line
- Injection therapy
- Clips


Complications

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Strictures
Band Complications
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Clinical Case: Stricture

35 y/o female 3 years post-RYGB with gastrojejunal anastomotic stricture. She underwent 5 sessions of balloon dilatation with short duration of response (3 weeks at best). Revision surgery has been recommended. She now presents for second opinion. Next steps?

Don’t Over Dilate!


Clinical Case: Stricture

Etiology: ulceration, ischemia, band complication
- Circular staplers OR 11.3
Treatment
- Balloon dilation 66-93% successful, 2-3 sessions often required
- Up to but not exceeding 15 mm on first treatment
- FB removal
- Surgical revision

More aggressive endoscopic approach
- Remove suture material
- Inject saline / steroid
- Consider needle-knife incision

Durable resolution of symptoms was achieved after two sessions of suture removal, injection, and dilation
Clinical Case

38 yo RYGB POD 2, referred for endoscopy due to inability to remove NG tube
Attempts cause severe pain
What’s the endoscopic treatment?

Do NOT cut suture!

Complications

- Anastomotic Ulcers
- Strictures
- Band Complications
- Fistulae and Leaks
- PB Limb / Gastric Remnant

Band Erosion

Incidence 2%
Due to inflammatory reaction
Symptoms
  • Severe pain, nausea, emesis
Treatment
  • Endoscopic removal
  • Surgical revision
Different approach required
Complications

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Procedures of Concern

Roux-en-Y Gastric Bypass (open)

• Two anastomoses
  ◦ Staples and/or sutures
  ◦ Additional incontinuity staple line
    ◦ Tissue separated but not transected
    ◦ Gastro-gastric fistula up to 30%
  ◦ Leaks rate 1.68% to 2.60%


Procedures of Concern

Roux-en-Y Gastric Bypass (Laparoscopic)

• Two anastomoses
  ◦ Staples and/or sutures
  ◦ Additional divided staple line
    ◦ Tissue transected (physically separated)
    ◦ Gastro-gastric fistula rare (1%)
  ◦ Leak rate 2.05% to 5.20%

Roux-en-Y Leak Sites

Location
- Type 1 Gastric pouch
- Type 2 GJ anastomosis
- Type 3 Jejunal stump
- Type 4 JJ anastomosis
- Type 5 Remnant
- Type 6 Duodenal stump
- Type 7 Blind end biliary jejunal limb

Type 1-2: 70-80%
  - 9% mortality

Type 4: 5-10%
  - 30-40% mortality

Types 3, 5, 6, 7: Rare
  - 0-22% mortality

Procedures of Concern

Sleeve Gastrectomy
  - No anastomosis
  - Long divided staple line
  - Resection of gastric fundus and body
  - Leak rate 0-7%

89% occur in the proximal sleeve
> 75% occur after discharge (10d)
Diagnosis
Clinical signs (Nonspecific)
• Often present without fever, leukocytosis, or pain
• Tachycardia 72-92% (earliest and most common)
• Nausea / emesis (up to 80%)
• Increased drain output

UGI / CT scan
• Roughly 70% sensitivity
Methylene blue swallow
Elevated C reactive protein (>11)

General Management
Nil per os, correct electrolyte abnormalities, antibiotics, total parenteral nutrition or enteral feedings
• Enteral feedings should be administered distal to the leak site

Drainage
• Surgical, Radiologic, Endoscopic?

Medical management successful in 36%
• Better for Type I than Type II

Endoscopic Management
Initial Steps
Procedures done with GA, fluoroscopy, and CO2
Define anatomy and identify exact leak site
• Drain bubble test
• Methylene blue/contrast drain studies
Remove foreign material
• Staples, suture, migrated drains
Treat distal obstruction
Confirm adequate drainage
Endoscopic Management

Tools for Leak Closure

Exclusion Techniques
• Covered Stents – case series

Closure Techniques
• Clips – case reports and small series
• Suturing – case reports
• Glue – case reports
• Mesh – case reports

Endoscopic Management

Covered Stents

Partially covered SEMS
• Allowing ingrowth at top of stent
• Likely lower migration rates, but difficult to remove
• Prevents leakage of fluid from around top of stent, but not bottom

Fully covered SEMS
• Easy to remove

No SEMS are specifically approved for the treatment of leaks or endoscopic removal

Stent Meta-analysis

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<th>Year of Publication</th>
<th>No of Patients</th>
<th>Type of Stent</th>
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<tr>
<td>Fukumoto et al</td>
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<td>2009</td>
<td>3</td>
<td>Ultraflex and NITI-S Esophageal Stent</td>
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Stents for Sleeve Leaks

Several small series (<50 patients)
- Partially covered SEMS
  - Removal often with use of SEPS
- 75-81% success rate
- Effective in the ‘acute setting’
- Present later than RYGB

Treat Down Stream Obstruction

Dilation of gastric sleeve with achalasia balloon
- Effective at treatment of proximal leaks
Stents are effective in treating bariatric surgical leaks.

Stents are also safe:
- No associated mortality in published series
- 17% migration rate, which may be minimized by placement of large diameter / long stents, two stents, nasal bridal, or suturing stent in place.

Endoscopic Management

Stents

Clips

Nitinol cap-mounted clip
- Designed for tissue opposition
- Case reports and series:
  - N 188, L 32, F 108, P 48
  - Clinical success: 64%
    - L 80%, F 45%, P 95%
- Hard to remove

Gastrogastric Fistula

95 patients with GGF
- Avg 2.2 sutures placed
- 95% initial closure rate
- 65% re-open at avg 177 days
- Fistula < 1 cm predicts better response with durable closure in over 30% (mean flu 395 days)
- No fistula over 2 cm remained closed
Clinical Case

40 year old female 5 years post-RYGB with iron deficient anemia and heme positive stools
Normal EGD and colonoscopy
Capsule study normal

Next steps?

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ERCP after RYGB

Indications for ERCP post-RYGB surgery same as for those with native gastrointestinal anatomy
- Choledocholithiasis, cholangitis, painless jaundice, biliary pancreatitis, leaks, SOD

Some diseases occur more often in RYGB
- Rapid weight loss results in a lithogenic state, due to increased bile mucin and calcium concentration

Therapeutic Alternative to ERCP: Percutaneous Drainage

Useful in acute infection

Suboptimal
- Prolonged drain placement often required
- Increased rate of infection
- Larger stoned pose challenge

Endoscopic Alternatives

Standard enteroscope
- Challenging
  - Length of Roux limb
  - Acute angle of JJ anastomosis

Alternate techniques
- SB / DB enteroscope
- ShapeLock enteroscope
- Spirus
- Surgical assistance
Endoscopic Alternatives

ERCP success rates are low in RYGB

Device assisted enteroscopy with ERCP is time consuming and has increased complications

Laparoscopically assisted ERCP is logistically difficult and carries complications associated with surgery

Optimal Technique

Local expertise

Time from surgery
- Avoid pressure on fresh anastomosis
- May prefer surgical approach or percutaneous

Acuity
- If septic from cholangitis, percutaneous may be good first step

Number of procedures anticipated
- G-tube for repeat access

Connected Roux-en-O

Present with chronic nausea +/- emesis.

Retrograde peristalsis in ‘Roux-limb’

Diagnose with UGI or motility evaluation
Conclusion

Many complications after bariatric surgery are amenable to endoscopic therapy

Although many of these techniques may seem aggressive, they may offer a significantly less invasive approach than surgical alternatives

Gastroenterologists have the knowledge and technical ability to help this struggling patient population

Thank You!