Endoscopic Management of Bariatric Surgery Complications

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Different Bariatric Surgeries

- Adjustable Gastric Band (AGB)
- Roux-en-Y Gastric Bypass (RYGB)
- Biliopancreatic Diversion with a Duodenal Switch (BPD-DS)
- Vertical Sleeve Gastrectomy (VSG)

* Previously most commonly performed in US
** Now most commonly performed in US
Marvin Ryou, MD

**RYGB**

- Pouch
- Gj Anastomosis
- Roux Limb
- Pancreaticobiliary Limb
- JJ Anastomosis

**RYGB Complications**

- Anastomotic stricture
- Marginal ulcer
- Retained foreign materials (sutures, staples)
- Gastrogastric fistula
- Dilated gastrojejunostomy
- Choledocholithiasis after surgery

- Dilation
- PPI
- Endoscopic removal
- Clips & Suturing
- Suturing
- Alternative ERCP methods

Major Complication Rate = 15%
GJ Anastomotic Strictures

- Incidence of 4% - 8%
- May differ according to how GJ constructed
- < 10 mm considered significant
- TTS dilators, serial Rx
- No more than 15 mm or concern for weight regain
- Perforation rate ~ 2%

<table>
<thead>
<tr>
<th>Study Authors</th>
<th>Stricture Rate</th>
<th>Dilation Type</th>
<th>Median Time to Dx</th>
<th>Overall Success</th>
<th>Success After 1 Dilation</th>
<th>Adverse Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nguyen</td>
<td>15.7%</td>
<td>Balloon</td>
<td>46 days</td>
<td>100%</td>
<td>83%</td>
<td>None</td>
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<tr>
<td>Barba</td>
<td>11.0%</td>
<td>Balloon</td>
<td>NR</td>
<td>100%</td>
<td>67%</td>
<td>None</td>
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<tr>
<td>Go</td>
<td>6.8%</td>
<td>Balloon</td>
<td>54 days</td>
<td>95%</td>
<td>NR</td>
<td>3%</td>
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<tr>
<td>Peifer</td>
<td>5.4%</td>
<td>Balloon</td>
<td>43 days</td>
<td>98%</td>
<td>79%</td>
<td>2.3% (Mallory Weiss)</td>
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<tr>
<td>Escalona</td>
<td>6.9%</td>
<td>Savary</td>
<td>51 days</td>
<td>100%</td>
<td>76%</td>
<td>1.9% (pain)</td>
</tr>
<tr>
<td>Fernandez</td>
<td>6%</td>
<td>Savary</td>
<td>69 days</td>
<td>100%</td>
<td>46%</td>
<td>None</td>
</tr>
<tr>
<td>Ukleja</td>
<td>6%</td>
<td>Balloon</td>
<td>60 days</td>
<td>100%</td>
<td>28%</td>
<td>4.9% (perf)</td>
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<tr>
<td>Matthew</td>
<td>6.5%</td>
<td>Balloon</td>
<td>66 days</td>
<td>100%</td>
<td>NR</td>
<td>3.2% (perf)</td>
</tr>
</tbody>
</table>
Marginal (GJ) Ulceration

- 0.49% - 20% post RYGB
- Presentation: months to years
- Epigastric pain, nausea, vomiting, food intolerance, bleeding
- Smoking, NSAIDs, diabetes, H. pylori, retained parietal cells, GG fistula, foreign body

Treatment Protocol

1. Omeprazole 40 mg BID; Carafate Slurry 1g QID
2. Remedy Reversible Etiologies
3. Repeat Endoscopy in 2-4 months
4. If improvement, continue status quo
5. If worsening, refer for surgical revision
Pain/Ulcers from Retained Foreign Body

- Sutures/staples can cause pain and ulceration
- Silk → endoscopic scissors
- Polypropylene → loop cutters
- Staples → rat tooth forceps

Dilated GJ Causing Weight Regain

- > 20 mm diameter
- Endoscopic suturing (Apollo)
- Pursestring technique
- +/- antecedent EMR / ESD
- Longterm efficacy unknown
Transoral Outlet Reduction (TORe)

- Multicenter randomized sham control
- TORe weight reduction 3.5%
- Controls 0.4%
- Level 1 evidence


Gastrogastic Fistula

- 0.5% to 4%
- Abdominal pain, weight regain, ulcer
- UGI series and endoscopy
- Endoscopic treatments include clipping, suturing
- More successful for small fistulae (<10 mm)
**Choledocholithiasis**

- Single balloon and Double balloon enteroscopy
  - Forward viewing = tangential view of ampulla
  - No elevator
  - Long 2.8 mm channel; limited accessories
- Intraoperative ERCP
- Transgastric ERCP

**Sleeve Gastrectomy**

- Incisura Stenosis
- Staple Line Leak
Gastric Vasculature

- Angle of His - watershed area

Sleeve Gastrectomy

- Pylorus - physiologic "obstruction"
Sleeve Gastrectomy

- Pylorus- physiologic “obstruction”
- “L”, “S”, or “>” shaped incisura

Longest staple line in bariatric surgery

Up to 30 cm in length
Sleeve Gastrectomy

- Pylorus- physiologic “obstruction”
- “L”, “S”, or “>” shaped incisura
- Longest staple line in bariatric surgery
- Variable tissue thickness

Sleeve Gastrectomy

A Hypertensive System Created by a Long Staple Line Across Variable Tissue Thickness
LSG Complications

- Staple Line Leak
- Incisura Stenosis
- Both Leak and Stenosis
- Stent, Glue
- Pneumatic Dilation
- Septotomy and Dilation

Major Complication Rate = 5-10%

Leaks - General Issues

- Patient Related Considerations
  - Timing
    - Acute (<48h)?
    - Chronic (> 2 weeks)
  - Abscess control - IR drainage
  - Contraindications to endoscopic Rx:
    - Sepsis
    - Uncontained perforation

- Endoscopic Considerations
  - General Anesthesia
  - CO2 insufflation
  - Methylene blue test (mixed with contrast)
  - Fistuloscopy and Clean-out
Stents Helpful for Early Leaks

- Stents (SEMS) useful for acute leaks
- May help suppress sepsis
- May allow some PO intake

Puig CA, et al. SOARD. 2014

Stents Unhelpful for Chronic Strictures & Leaks

- SEMS unhelpful for chronic persistent leak
  - 4/21 (19%) successful
  - Migration occurred in 10/21 (47%)

Puig CA, et al. SOARD. 2014
Suturing for Stent Fixation

Swanstrom L, GIE 2011

New Dedicated Stents?

Taewoong Niti-S™ Esophageal stent Mega

The alternative treatment of leaks or fistulas after sleeve gastrectomy.
Other Options

- Fibrin glue
- Internal stenting
- Surgisis Plugs / Vicryl Mesh

Stricturotomy

- A: Septum and fistulous orifice (left); B: fistula orifice; C: enlargement of the pouch diameter after septotomy

Baretta et al. Surg Endosc 2014
Stricturotomy

- Stricturotomy - septum between the perigastric cavity & gastric pouch, incised with needle knife or APC. Cut does not exceed bottom of cavity (similar to Zenker’s diverticulotomy)
- APC settings: 1.5 L/min, power of 40W (lower risk of hemorrhage)
- This technique theoretically allows for internal drainage of abscess and ultimately fistula closure
- 1-2 sessions
- 2-3 weeks before full closure

Pneumatic Balloon Dilation

- 30 mm first
- 1 balloon per session
- May require serial Rx
- Rarely go to 40 mm
- General Anesthesia
- Procedural Antibiotics
- Painful- plan post procedure admission
- 5% perforation rate
- Can also dilate pylorus (20 mm) or Botox pylorus
Summary

- Growing population with bariatric surgical complications
- Gastroenterologists will be increasingly asked to assist with treatment
- Maintain communication with bariatric surgeon re: optimal endoscopic Rx
- Types of surgical complications are changing

Thank You