



***IN THE NAME OF
GOD***



Late Complications Following Sleeve Gastrectomy Requiring Revision

Weekly Book Review

by:

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- most commonly performed bariatric operation
- less complex operation
- creation of a remnant that has elevated intragastric pressures
- 15% of LSG patients required surgical revision





GERD

- 0.6% of cases
- significant decrease in lower esophageal sphincter (LES) resting tone and pressures
- routine preoperative esophageal manometry
- enlarged or dilated proximal sleeve
- strictured, narrowed sleeve
- functional twist
- disruption of the antropyloric pump mechanism
- non-repaired hiatal hernia





- technical modifications -procedure and/or preoperative testing- **preoperative endoscopy**

- 47 of patients with preoperative GERD

- 9 required conversion to a LRYGB

- Hill procedure

- suturing the anterior and posterior phrenoesophageal bundles to the preaortic fascia*

- Stretta radiofrequency delivery to the LES





STENOSIS

postoperative dysphagia, pain, and poor oral tolerance

between 0.69% and 3.5% of cases





- surgical technique
- appropriate staple firing and greater curvature traction methods near the incisura angularis
- Postoperative anatomy
- inappropriate direction of staple firing leading to a severe intraluminal narrowing- **incisura angularis**
- staple-line axial deviation- **inadequate posterior dissection**
- inappropriate tension on gastric fundus tissue- **firing near the lesser curvature**
- smaller size bougie



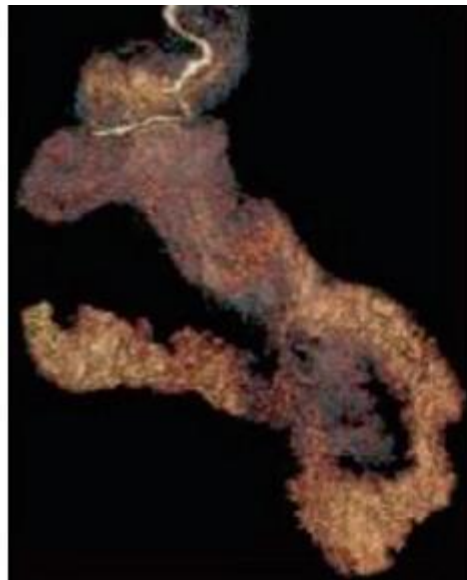


MANAGEMENT STRATEGIES

- diagnostic upper endoscopy
- serial balloon dilation- success rate around 56%
- esophageal manometry
- Revisional or conversional surgeries





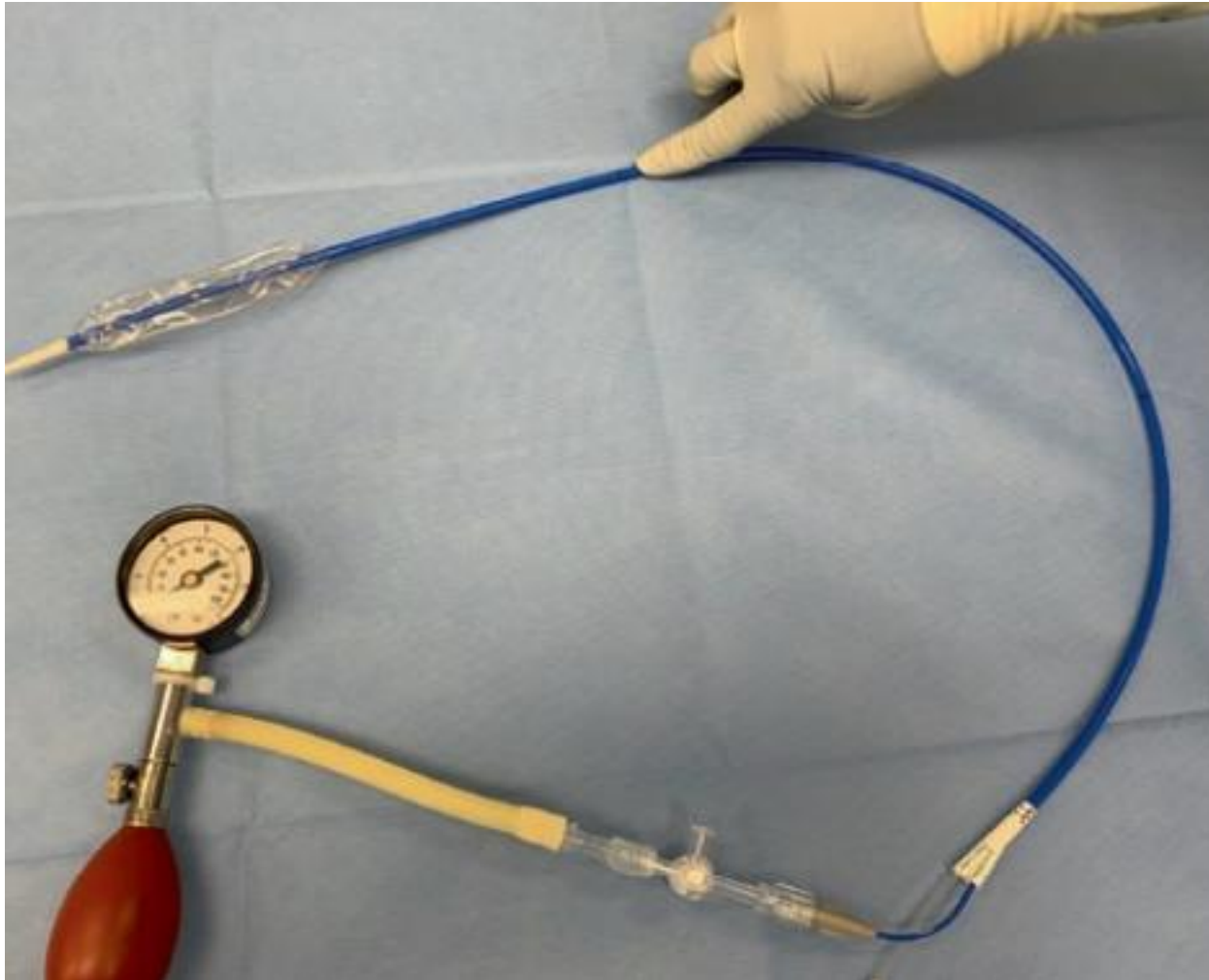






- treatment with a pneumatic balloon dilator is more effective than a controlled radial expansion (CRE) balloon
- temporary self-expandable metal stents
- distal stent migration and the overall poor tolerance









- conversion to LRYGB
- proximal to stenotic segment
- confirmed with intraoperative endoscopy
- Stricturoplasty

stenotic segment is too long

anterior seromyotomy-omentoplasty

- Gastric wedge resection

advanced skills and knowledge of backup salvage





CHRONIC LEAK/FISTULAS

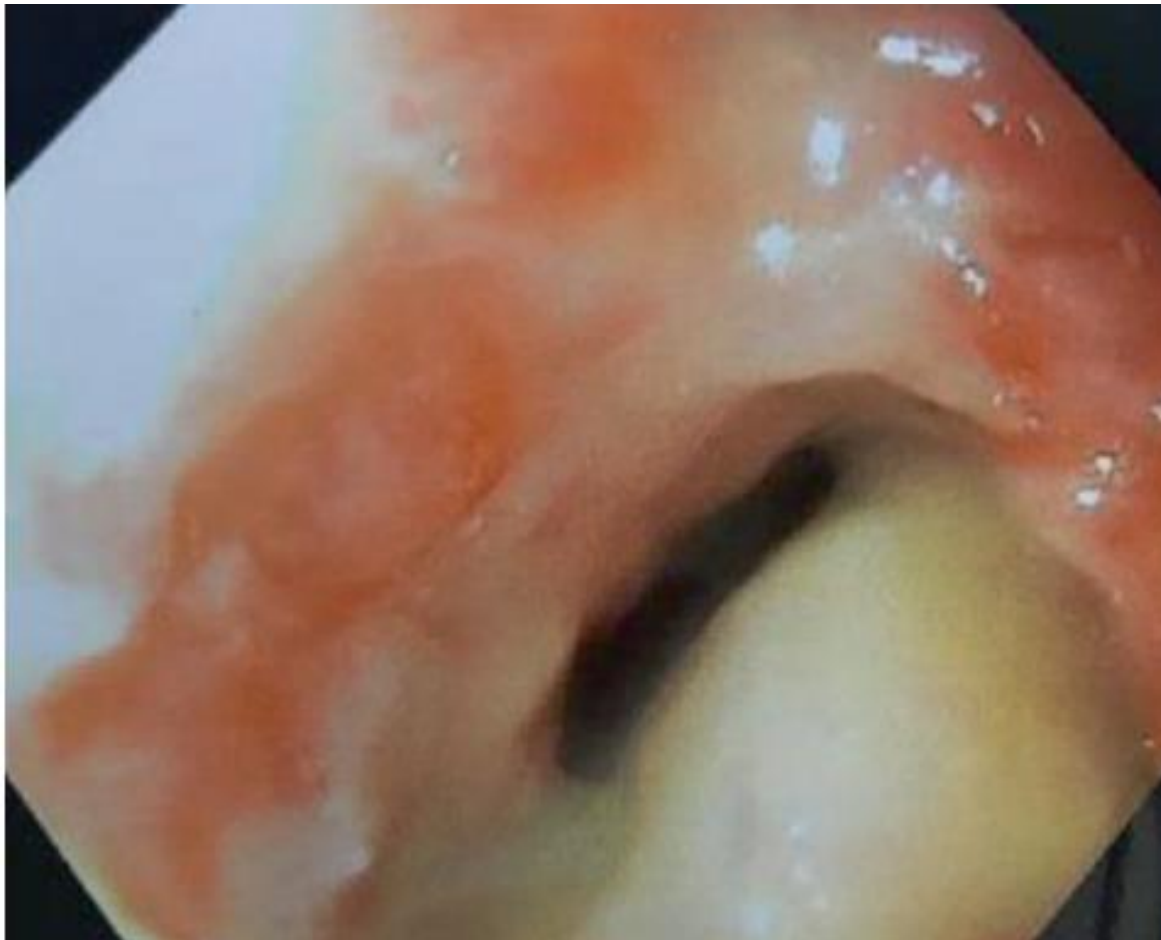
- incidence of 0.1–8.3%
- proximal third of the gastric staple line in 89%
mechanical and/or an ischemic process
- prevent such a complication
 - atraumatic tissue handling
 - avoidance of thermal injuries
 - avoidance of stapler misfiring
 - avoidance of creating a distal stenosis
- reduced overall leak rate in LSG performed
using an absorbable polymer membrane
staple-line reinforcement technique?





- treatment of sepsis
 - endoscopic management
 - diversion of intestinal flow
 - drainage of sepsis
 - promoting elements that allow for healing
 - Initial endoscopic management
- goals of drainage of any extraluminal collection
- diversion of saliva and oral contents





- Diversion is often accomplished with self-expanding metal stent(s) (SEMS)
- endoluminal vacuum therapy (E-Vac)
sponge is endoscopically placed through the gastric defect into the peritoneal cavity
- Endoscopic internal drainage (EID)-double pigtail stent placement
- endoscopic septotomy with distal stricture dilation





- Closure time is typically greater than 4 weeks
- Non-operative management should be favored
- surgical procedures
- Roux limb to form a fistulo-jejunostomy
- conversion to Roux-en-Y GB
- gastrectomy with esophagojejunostomy
- gastrocolic or gastropleural fistula
- laparoscopic resection with tissue interposition



THANK YOU





Weekly journal club

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Endoscopic Management of Sleeve Stenosis

Obesity Surgery 2021





- significant post-operative complications even at the most experienced of bariatric centers

- dysphagia, epigastric pain, vomiting, reflux, and eventually malnutrition and vitamin deficiencies

- “true” stricture-most common at the angular incisura

- close to the bougie

- postoperative hematoma, inflammation, or later scar formation

- “twisted” sleeve (“helix” sleeve)-4%

- misalignment of the staple line-tight angle along the long axis of the sleeve





- Diagnosis
- upper gastrointestinal swallow study
- no passage through the sleeve, or narrowing, with or without some degree of reflux
- Upper endoscopy
- Pneumatic dilations, endoscopic stricturoplasty with argon beam, and endoscopic stents

Questions remain?





- endoscopic management of sleeve stricture
- pneumatic dilation with or without argon beam - stricturoplasty*
- efficacy and safety of endoscopic balloon dilation with or without stricturotomy





MATERIALS AND METHODS

- 2010 till 2016

- symptoms of dysphagia

- demographics, operative data, interval to endoscopic treatment, and outcomes of pneumatic dilations including number of dilations per patient, complications, and need for conversion to gastric bypass

- improvement of symptoms and the ability to tolerate solid foods

- weight regain





- primary endpoint-clinical resolution

- resuming oral diet and avoidance of further surgical or endoscopic intervention*

- Secondary endpoints

- incidence of sleeve stenosis, degree of weight regain, and adverse outcomes*





ENDOSCOPIC TECHNIQUE

- under conscious sedation
- pneumatic 30mm balloon
- introduced over a guide wire
- Advanced under direct endoscopic visualization
- balloon was inflated to 30mm for duration of 2 min
- repeated if insufficient in 1–2 weeks
- after 2 sessions, Argon beam endoscopic stricturoplasty
- after 4 sessions, was defined as refractory sleeve stenosis
- proton pump inhibitor for 1 month post endoscopic





RESULTS

- Sixty seven consecutive patients underwent 130 endoscopic dilations from Feb. 2013 to Jan 2017
- 1386 sleeve gastrectomies-Twenty three of 67 patients were referred
- sleeve stenosis rate of 3.2%



Table 1 Demographics

No. of patients	67
No. of procedures	130
Mean age at LSG (range)	43.3 (18–68)
Male/female (%)	16/51 (76.1%)
Mean BMI at LSG (SD)	41.5 (31–63)



Table 2 Interval between sleeve gastrectomy to first dilation attempt

Interval	N	Successful	%	Perforation
0–6 months	45	33	73.3	2
6–12 months	10	8	80	0
>12 months	12	10	83.3	0





- Success rate was 76.1%(51 of 67)
- 16 patients eventually underwent surgical intervention
- Thirteen patients underwent argon beam stricturoplasty -61.5% (8 of 13)
- The average time from surgery was 9 weeks
- average follow-up post endoscopic treatment was 1.9 years



Table 3 Number of dilation attempts

# of attempts	N	Successful	%	Perforation
1	30	24	80	1
2	19	16	84.2	1
3	11	7	63.6	0
4	6	4	66.7	0
5	1	0	0	0





- Adverse outcomes occurred in 3 patients
- sleeve perforation
- cerebrovascular accident

Aspirin

- Revisional surgery was indicated in 16 patients
- Two roux-en-y gastric bypass for acute sleeve perforation
- Six were electively converted to roux-en-y gastric bypass
- 7 patients underwent a single anastomosis gastric bypass
- 1 patient was found to have a kinked sleeve secondary to adhesions that were lysed with satisfactory outcome





- Average weight regain following endoscopic sleeve dilation was 3 kg
- Eighteen patients (26.8%) regained over 5% of their lost weight, and elevated their BMI from 24 kg/m² to 27.2 kg/m²
- Ten of these patients had a more significant weight regain of over 10%



DISCUSSION

- some degree of dysphagia is expected
- ongoing dysphagia to solid foods and frequent - episodes of vomiting
- delay in diagnosis
- interval between surgery
- time for both the surgeon and the patient
- safe
- Surgical conversion
- Endoscopic stenting
- Weight regain





CONCLUSIONS

Endoscopic management of sleeve stenosis is **safe and effective**, with a success rate of ***over 75%***



THANK YOU

