

Five Things a Family Physician Needs to Know about Baritric Surgery.

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Five Things to Know About Bariatric Surgery

Presenter Disclosure:

Dr. J K Reed has **no** potential for conflict of interest with this presentation

Bariatric Centre of Excellence
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Bariatric Center of Excellence

- Surgical Program: 370 surgeries/year
- 1 of 5 Centers of Excellence in Ontario
- 4 Bariatric Surgeons
 - (Dr. Reed, Dr. Foute Nelong, Dr. Pereira Hong, Dr. Bhajani)
- 7 nurses
- 4 dietitians
- 2 social Workers
- 4 clerks
- 1 pharmacist
- 1 Internist

Five Things to Know About Bariatric Surgery

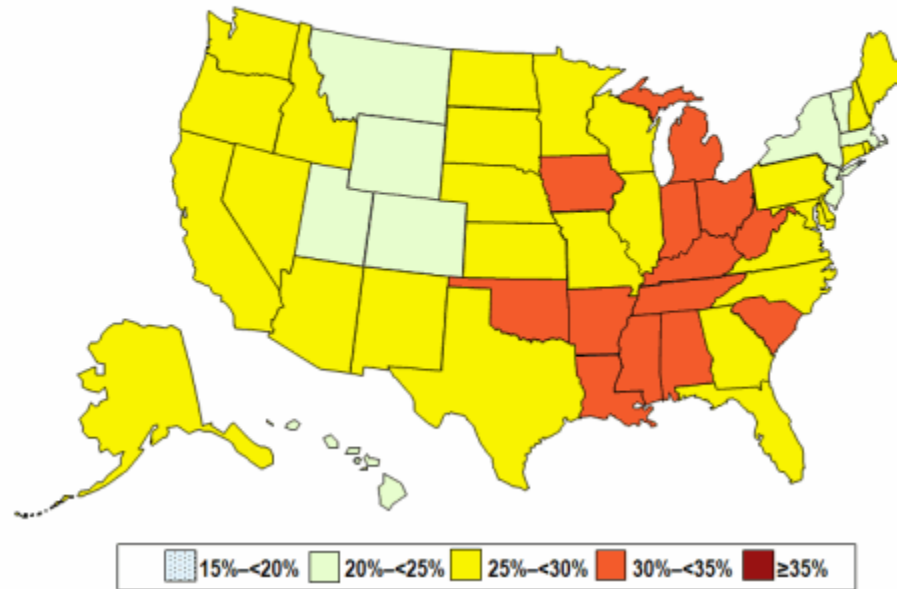
1. Obesity is a disease
2. Non surgical approach to early obesity
3. How to make a referral for assessment
4. Who to refer (beyond BMI)
5. Results and realistic expectations
6. Short and Long Term Surgical induced issues and complications

Resources to Help MDs Understand the Obesity Epidemic

www.cdc.gov/obesity/data/adult.html

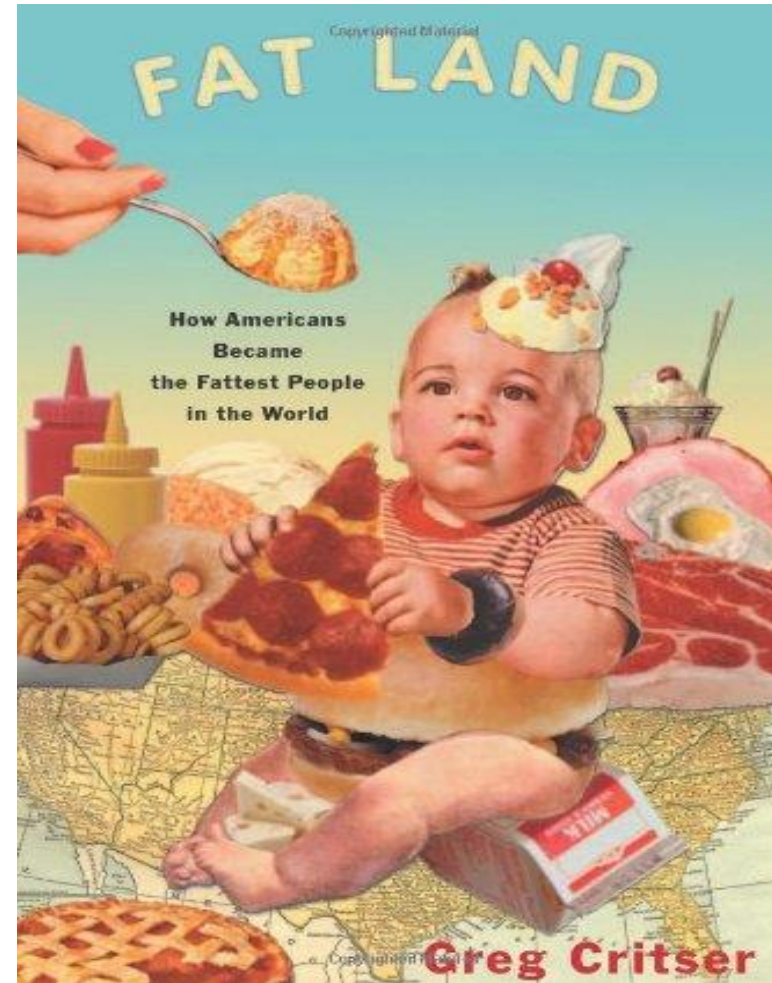
Prevalence* of Self-Reported Obesity Among U.S. Adults BRFSS, 2012

*Prevalence reflects BRFSS methodological changes in 2011, and these estimates should not be compared to those before 2011.



Resources to Help MDs Understand the Obesity Epidemic

Gerg Critser's book outlining genesis of the epidemic.



Resources to Help MDs Understand the Obesity Epidemic

Pressure at the check out counter.



Cohen DA, Babey SH. N Engl J Med 2012;367:1381-1383.



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Resources to Help MDs Understand the Obesity Epidemic

<http://www.niddk.nih.gov/research-funding/at-niddk/labs-branches/LBM/integrative-physiology-section/body-weight-simulator/Pages/body-weight-simulator.aspx>

Human Weight Simulator

Set Your Goal Weight ...or Specify a Lifestyle Change

My goal is to weigh 70.0 kg in 180 days

Weight Change Phase: If you change your physical activity by 0% you can meet your goal by eating 10770 kJ/day, which is a change of 0

Goal Maintenance Phase: If you permanently change your activity by 0% you can maintain your goal by eating 10770 kJ/day, which is a change of 0

Run Simulation

Goal Simulation Displayed

Length of Simulation (days) 365

Horizontal Zoom: Min, Max, Zoomed Out, Zoomed In

Vertical Zoom: Zoomed Out, Zoomed In

Initial Weight	70.0	Initial Fat %	13.9	Initial BMI	21.6
Final Weight	70.0	Final Fat %	13.9	Final BMI	21.6

Help

- Advanced Controls
- Highlights On
- Show Weight Range
- Show Legend
- Show Grid
- Graph Attached
- Default Colors

72 84 96 108 120 132 144 156 168 180 192 204 216 228 240 252 264 276 288 300 312 324 336 348 360

Click the "Start Simulator" button below, please

Make sure that the applet be given access to your computer.

Click "open -a Java\ Preferences" in a terminal)

The NIH Office for Intramural Research are committed to their programs. To provide this information, the Body Weight Simulator (as amended) is available to the general public. Section 508 requires that all information provided to the general public have access to and use of information and services and that no undue burden would be imposed. This website is provided for informational purposes, acknowledging that both may be a work-in-progress.

For more information on the Body Weight Simulator. However, all

software (e.g., speech recognition software, etc.) who experiences

How to Refer a Patient for Bariatric Surgical Assessment

- Ontario Bariatric Network Registry @ www.bariatricregistry.ca
- Physician or N/P must register prior to referral through the website (each registered user will receive a Bariatric Referral ID number for use with each referral)
- For more information access the Ontario Network Web Site: www.ontariobariatricnetwork.ca

Provincial Guidelines for Referral

- Age: Usually under age 65
- BMI: 40 and over,
 - Or 35 with weight responsive comorbidities such as diabetes
- Geographical Center of Excellence closest to you
- Psychologically and Medically fit for surgery
- Contraindications:
 - Smoking - need to be smoke free for 6 months
 - Current substance abuse (alcohol and drugs)
 - Untreated/unstable significant psychiatric illness
 - Cancer within 2 years
 - Cushingoid (endogenous or exogenous)

Bariatric Surgery versus Intensive Medical Therapy for Diabetes — 3-Year Outcomes

March 31, 2014 DOI: 10.1056/NEJMoa1401329

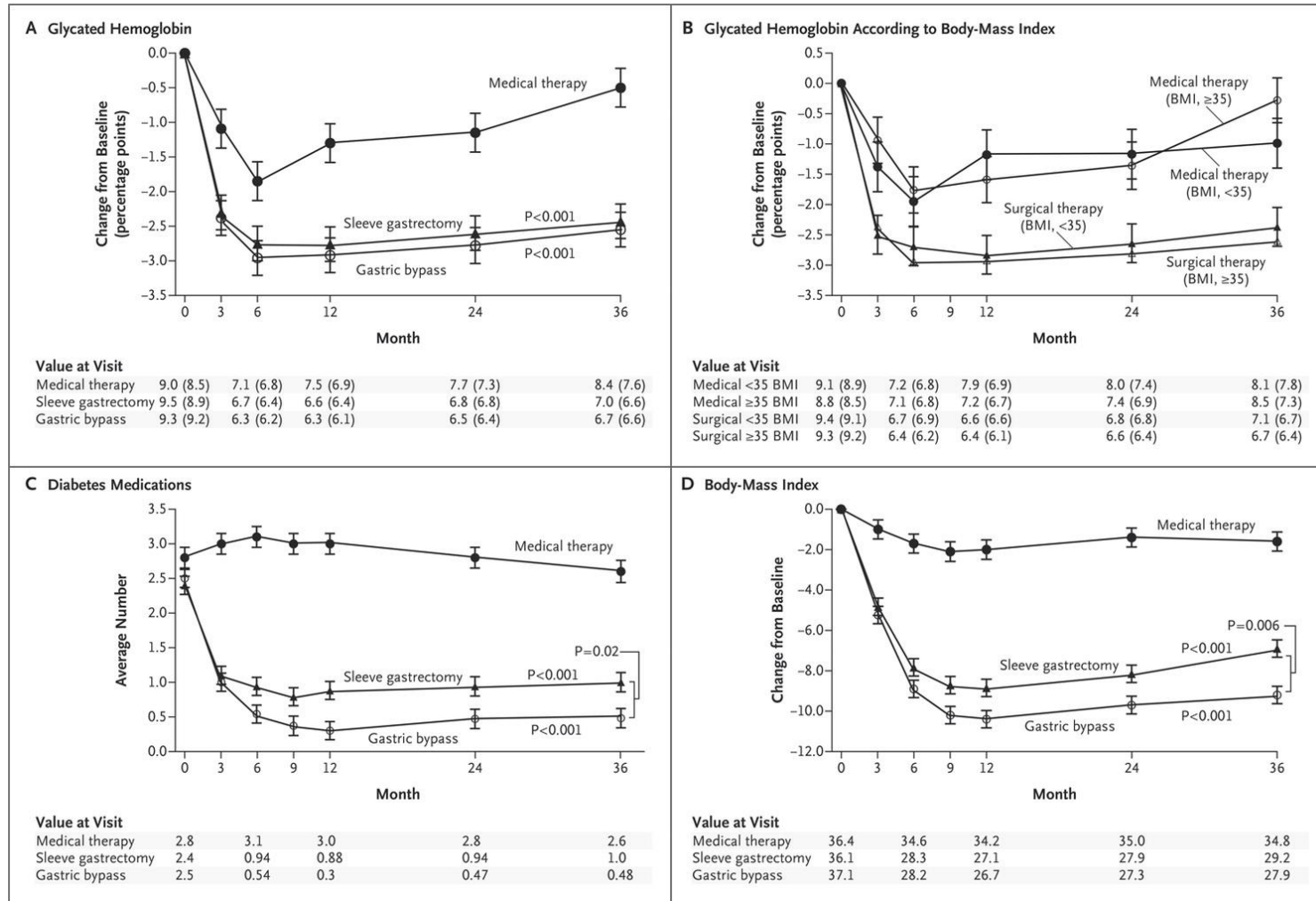
- Philip R. Schauer, M.D., Deepak L. Bhatt, M.D., M.P.H., John P. Kirwan, Ph.D., Kathy Wolski, M.P.H., Stacy A. Brethauer, M.D., Sankar D. Navaneethan, M.D., M.P.H., Ali Aminian, M.D., Claire E. Pothier, M.P.H., Esther S.H. Kim, M.D., M.P.H., Steven E. Nissen, M.D., and Sangeeta R. Kashyap, M.D. for the STAMPEDE Investigators

Bariatric Surgery versus Intensive Medical Therapy for Diabetes — 3-Year Outcomes

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- **Conclusions**

- Among obese patients with uncontrolled type 2 diabetes, 3 years of intensive medical therapy plus bariatric surgery resulted in glycemic control in significantly more patients than did medical therapy alone. Analyses of secondary end points, including body weight, use of glucose-lowering medications, and quality of life, also showed favorable results at 3 years in the surgical groups, as compared with the group receiving medical therapy alone. (Funded by Ethicon and others; STAMPEDE ClinicalTrials.gov number, [NCT00432809](https://clinicaltrials.gov/ct2/show/study/NCT00432809).)



Original Article

Effects of Bariatric Surgery on Mortality in Swedish Obese Subjects

Lars Sjöström, M.D., Ph.D., Kristina Narbro, Ph.D., C. David Sjöström, M.D., Ph.D., Kristjan Karason, M.D., Ph.D., Bo Larsson, M.D., Ph.D., Hans Wedel, Ph.D., Ted Lystig, Ph.D., Marianne Sullivan, Ph.D., Claude Bouchard, Ph.D., Björn Carlsson, M.D., Ph.D., Calle Bengtsson, M.D., Ph.D., Sven Dahlgren, M.D., Ph.D., Anders Gummesson, M.D., Peter Jacobson, M.D., Ph.D., Jan Karlsson, Ph.D., Anna-Karin Lindroos, Ph.D., Hans Lönroth, M.D., Ph.D., Ingmar Näslund, M.D., Ph.D., Torsten Olbers, M.D., Ph.D., Kaj Stenlöf, M.D., Ph.D., Jarl Torgerson, M.D., Ph.D., Göran Ågren, M.D., Lena M.S. Carlsson, M.D., Ph.D., for the Swedish Obese Subjects Study

N Engl J Med
Volume 357(8):741-752
August 23, 2007



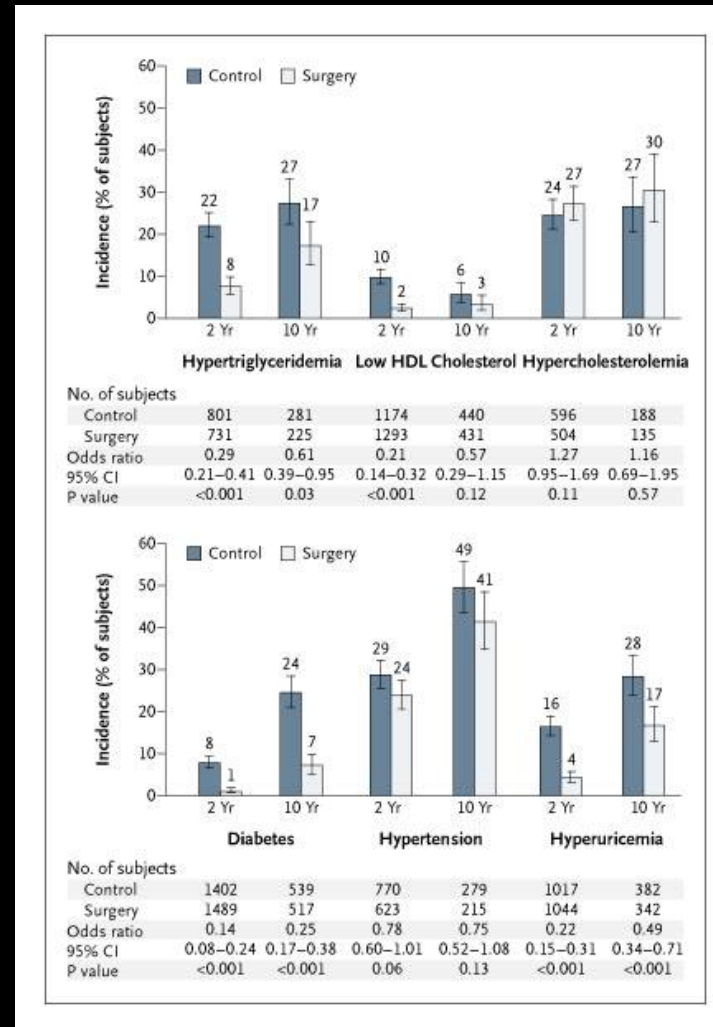
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Study Overview

- The prospective, controlled Swedish Obese Subjects study enrolled 4047 subjects who either underwent bariatric surgery or received conventional treatment
- The results of follow-up for up to 15 years suggest that bariatric surgery for severe obesity is associated with long-term weight loss and decreased overall mortality



Incidence of Diabetes, Lipid Disturbances, Hypertension, and Hyperuricemia among Subjects in the SOS Study over 2- and 10-Year Periods



Sjostrom, L. et al. N Engl J Med 2004;351:2683-2693



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Cause of Death

Table 2. Cause of Death.*

Variable	Surgery Group (N=2010)	Control Group (N=2037)
	<i>no. of subjects</i>	
Cardiovascular condition		
Any event	43	53
Cardiac	35	44
Myocardial infarction	13	25
Heart failure	2	5
Sudden death	20	14
Stroke	6	6
Intracerebral hemorrhage	2	4
Infarction	1	2
Subarachnoid bleeding	3	0
Other	2	3
Aortic aneurysm	1	2
Aortic thrombosis	0	1
Diabetic gangrene	1	0
Noncardiovascular condition		
Any event	58	76
Tumor	29	48
Cancer	29	47
Meningioma	0	1
Infection	12	3
Thromboembolic disease	5	7
Pulmonary embolism	4	7
Vena caval thrombosis	1	0
Other	12	18
Total no. of deaths	101	129

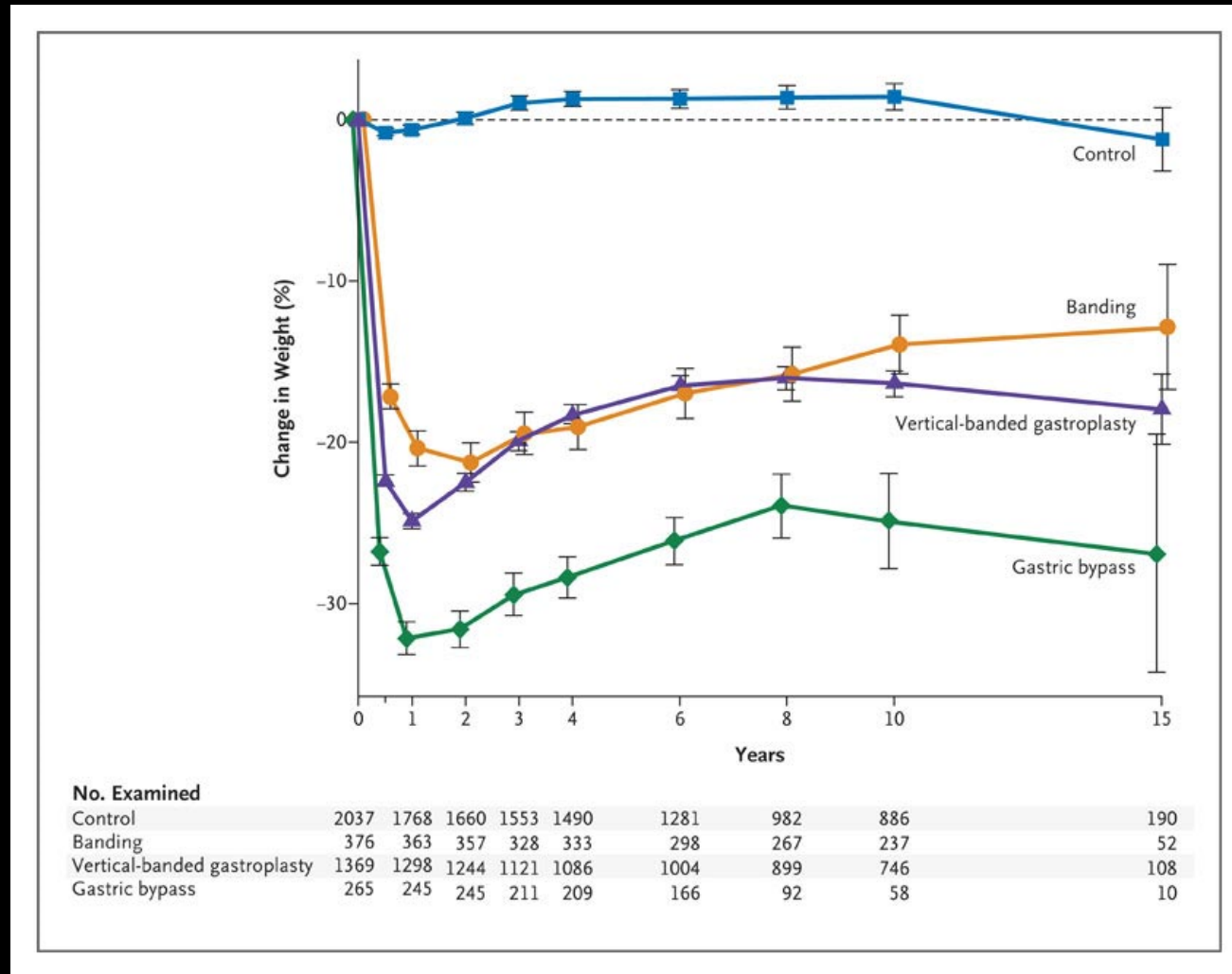
* During the first 90 days after study initiation, there were five deaths in the surgery group (four from peritonitis with organ failure and one sudden death) and two deaths in the control group (one from cancer of the pancreas and one from alcohol-related causes).

Sjostrom L et al. N Engl J Med 2007;357:741-752



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Mean Percent Weight Change during a 15-Year Period in the Control Group and the Surgery Group, According to the Method of Bariatric Surgery



Sjostrom L et al. N Engl J Med 2007;357:741-752



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Early Complications

Clinical Pearls for Emergency Care of the Bariatric Surgery Patient



1. Unstable Vital Signs

- Fever > 101° F
- Hypotension
- Tachycardia > 120 bpm x 4 hours
- Tachypnea
- Hypoxia
- Decreased urine output

EMERGENCY PRESENTATIONS:

2. Bright Red Blood by Mouth or Rectum, Melena, Bloody Drainage
3. Abdominal Pain or Colic > 4 hours
4. Nausea ± Vomiting > 4 hours
5. Vomiting ± Abdominal Pain

BARIATRIC COMPLICATIONS:

- Intra-Abdominal Bleeding
- Leaks and Sepsis
- Obstruction
- Pulmonary Embolism
- Vomiting ± Abdominal Pain
- Abdominal Compartment Syndrome

IMPORTANT: KNOW THE ANATOMY: IT CAN BE VERY CONFUSING!
Patients often don't know which procedure they have had, and surgeons vary the procedure dramatically. If you're not the primary surgeon, call the surgeon who performed the procedure.



Roux-en-Y Gastric Bypass



Vertical Banded Gastroplasty



Duodenal Switch



Sleeve Gastrectomy



Adjustable Gastric Band

Principles to Guide Management of Bariatric Emergencies

I. Critical Time Frame

- Diagnose within 6 hours
- To OR within 12-24 hours

II. Critical Warnings

- Call bariatric surgeon early, if not available, call general surgeon on call.
- These are not typical abdominal surgery patients; they do not exhibit expected or typical signs and symptoms, and they have no physiological reserve to weather complications.
- NG-tube:
 - Avoid "blind placement" due to risk of perforation
 - Will not decompress the distal stomach
- Avoid NSAIDs, ASA, Plavix, Steroids:
 - Greater risk of ulcer, band erosion and perforation
 - Place on PPI for gastric erosion safeguard
- Thiamine deficiency:
 - Initially avoid glucose in IV fluids (unless hypoglycemia is confirmed)
 - Use RL or NS w/ 100 ampule of multivitamin
 - Can result in Wernicke's syndrome, characterized by ataxia, confusion, blurred vision. IV dextrose will increase the risk of permanent neurologic impairment.
- Avoid overloading the gastric pouch with oral fluids or contrast – should only give 6 oz.

Initial Assessments

1. Physical exam and vital signs - may need to be serial.
2. Labs:
 - CBC
 - Comprehensive Chemistry Profile
 - Amylase
3. Imaging:
 - Chest X-Ray
 - CT of Abdomen with oral contrast
 - CT of Chest with IV contrast

Hospital Management of the Bariatric Surgery Patient

"FAST HUG"

- **FOOD:** Establish enteral or parenteral nutrition within 48 hours
- **ANALGESIA:** Control pain for patient comfort
- **SEDATION:** If on ventilator to prevent self-extubation
- **THROMBOEMBOLIC PROPHYLAXIS:** Mechanical and chemical
- **HEAD-OF-BED ELEVATED 30°** for aspiration risk
- **ULCER PROPHYLAXIS:** Proton pump inhibitor
- **GLUCOSE CONTROL:** Tight control with glucose < 150

• INTRA-ABDOMINAL BLEEDING

I. Emergency Presentation

- Bright Red Blood Oral or Rectal, Melena, Bloody Drainage, Tachycardia, Hypotension, Fainting
- < 48 hrs postop indicates potential bleed from staple line
 - > 48 hrs postop indicates potential marginal ulcer hemorrhage
 - Bleeding via oral route indicates potential pouch source
 - Melena or bleeding via rectal route indicates potential duodenal ulcer or distal stomach or bowel source.

II. Emergency Assessment and Treatment

- Give 2000ml NS fluid bolus
- Stop Anticoagulants, ASA or Plavix
- Type-Crossmatch PRBCs may need FFP or platelets
- Serial Hct/Hgb
- Frequent Vital Signs
- Monitor Urine Output
- Check Renal Profile
- Good IV access; may need central line

III. To Surgery if:

- Hypotension
 - Drop in Hct of 20%
 - Falling FET despite transfusion
 - Tachycardia > 120 x 4 hrs despite fluid bolus or blood transfusion
- **NOTE:** Consider EGD in OR under general anesthesia to control entry, ligate and cuture by EGD. Check for perforation. HIGH EGD/Visualization difficult if leak lined.

• PULMONARY EMBOLISM

I. Emergency Presentation

- Unstable vital signs with tachypnea ± chest pain

II. Emergency Assessment

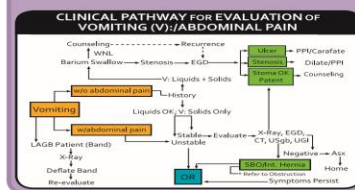
- IV contrast-enhanced chest CT
- Presentation of an intra-abdominal complication such as leak or closed-loop obstruction is often similar to that of PE.

• VOMITING ± ABDOMINAL PAIN

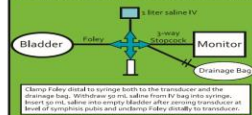
I. Emergency Presentation

- Vomiting associated with abdominal pain needs prompt surgical evaluation and observation until resolved or surgical exploration.

II. Emergency Assessment and Treatment



HOW TO MONITOR BLADDER PRESSURE:



• ABDOMINAL COMPARTMENT SYNDROME

I. Emergency Presentation

- Progressive respiratory insufficiency
- Renal failure
- Intra-abdominal hypertension (25-mm or mmHG bladder pressure)

- Associated with end-organ failure
- Can occur with intra-abdominal sepsis, bleeding or obstruction

II. Emergency Treatment → To Surgery

- Open the abdomen to decompress
- Place VAC dressing

• LEAKS AND SEPSIS

I. Emergency Presentation

- Unstable vital signs within 72 hours of bariatric surgery
- Persistent and progressive tachycardia (>120 bpm > 4 hrs) is the most sensitive indicator of potential surgical emergency.
- Signs of sepsis/leak may be subtle at first and may need to rule out hypovolemia, atelectasis, bleeding, pulmonary embolism (PE), obstruction and/or leak.
- Unstable vital signs at presentation are all signs of sepsis/leak, especially within 72 hours of bariatric surgery. Fever > 101° F, hypotension, tachycardia, tachypnea, hypoxia, decreased urine output.
- Presentation of an intra-abdominal complication, such as leak, is often similar to that of PE. Once PE is ruled out (w/IV contrast-enhanced chest CT), consider immediate surgical exploration.
- A negative abdominal CT does not definitively rule out a complication even when there is a leak.

II. Emergency Treatment

- Conservative nonoperative management of leaks may be considered if contained leak/abscess is well drained internally or externally with communication to drain documented by imaging and ONLY if the patient is stable clinically (T < 101° F, pulse < 120 bpm, WBC < 15,000, normal renal and respiratory function).
- OTHERWISE:
 - Surgical exploration

• OBSTRUCTION

I. Emergency Presentation

- Abdominal Pain or Colic > 4 hours
- Common postop complaint. Duration of more than 4 hours, or associated with vomiting, requires surgical evaluation and observation until resolved or treated. CT/UGI diagnostic in most cases, but not all.
- No place for NG-tube or conservative management.
- Acute bleed indicates potential obstruction due to dots in GI tract which may cause perforation.
- Consider CT of abdomen with oral contrast or barium UGI with small-bowel follow-through to the colon with contrast to assess for possible obstruction.
- Consider EGD to (A) rule out gastric outlet obstruction or (B) remove gastrografin contrast prior to anesthesia to prevent aspiration.
- X-rays, labs and physical exam often negative in patients with obstruction.
- Closed-loop obstructions and internal hernias are a risk after gastric bypass and may be lethal if dead bowel. Bowel can become ischemic in six hours.
- Adhesions may cause bowel obstructions in any patient after abdominal surgery and be unrelated to bariatric surgery.
- Beware of RED HERRINGS. Gallstones on ultrasound appear to be etiology while the real issue is dead bowel secondary to closed-loop obstruction.
- Beware of aspiration of gastrografin or CT contrast - consider awake endotracheal intubation or EGD prep.

Roux-en-Y Gastric Bypass

Three Sites for Internal Hernias:
Fig. 1. Potential mesenteric springs that could lead to internal hernias after Roux-en-Y gastric bypass. (A) Transverse mesocolon defect. (B) Pteriotomy. (C) Jejunocolic mesenteric defect.

See permission: Laethle, *Am Surg* 2009, 69: 523-5.

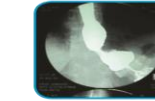
II. Emergency Treatment

- Presentation of an intra-abdominal complication, such as closed-loop obstruction, is often similar to that of PE. Once PE is ruled out (e.g., by IV contrast-enhanced chest CT) consider immediate surgical exploration.
- Dilated distal stomach or contrast in remnant = obstruction → requires immediate decompression.

Adjustable Gastric Band

- If nausea and vomiting is present, obtain flat plate of abdomen, with band tilted up compared to spine, and barium swallow to assess for possible stenosis or obstruction.
- To deflate the band, ask patient where their port is located and should be able to palpate on abdominal wall or use fluoroscopy. Can also see it on flat-plate x-ray. Use sterile prep under local. Insert non-coating Huber needle similar to that used for port-caths, as the system is under pressure and will leak. Remove as much fluid as possible, then re-evaluate symptoms and findings.
- Maximum band volume is 4-54 mL, depending on model.

Adjustable Gastric Band Obstructions



Normal LAGB - Band Tilted Up



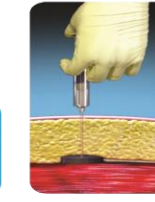
LAGB Too Tight - Normal Tilt



LAGB Slippage - Posterior



LAGB Slippage - Anterior



Deflate Band with Huber Needle

For more information, please visit www.asmb.org

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Late Surgical Complications

- 50% micronutrient deficiency at 5 years
 - Iron, vitamins D and B12
- 30% weight recidivism at 3 years
 - Failure to adopt meaning lifelong behavioural changes
- 25% cholelithiasis
 - ½ will need operation for symptoms
- 20% marital disharmony at 3 years
- 10% emergency surgical abdomen lifelong
 - gallstones/gastric ulcers/intestinal obstruction/other