

Anemia in the Bariatric Surgery Patient

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Disclosures

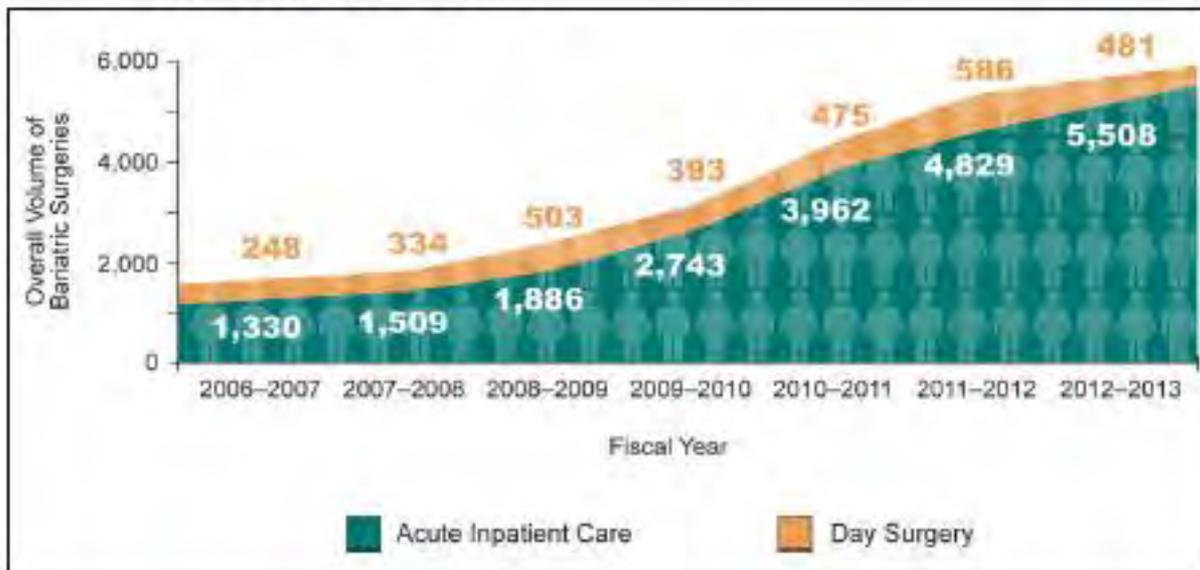
- I am not now, nor have I ever been a surgeon of any kind
- I cannot claim to be a specialist in care of bariatric surgery patients
- This presentation is not evidenced-based
- I think this presentation makes a relevant introduction to our next speaker

Typical Case

- Patient referred to hematology for anemia
- Past Medical History:
 - Gastric bypass surgery 4 years ago
- Current Medications:
 - Multivitamin daily
 - Iron- taken inconsistently due to side effects
- HPI:
 - Presented with exercise intolerance and fatigue
 - Found to be anemic
 - Started on oral iron with no impact after 3 months
- Laboratory investigations:
 - Hemoglobin <80 g/L
 - Ferritin <8 ug/L
 - B12 <130 pmol/L

We're All Gonna See This

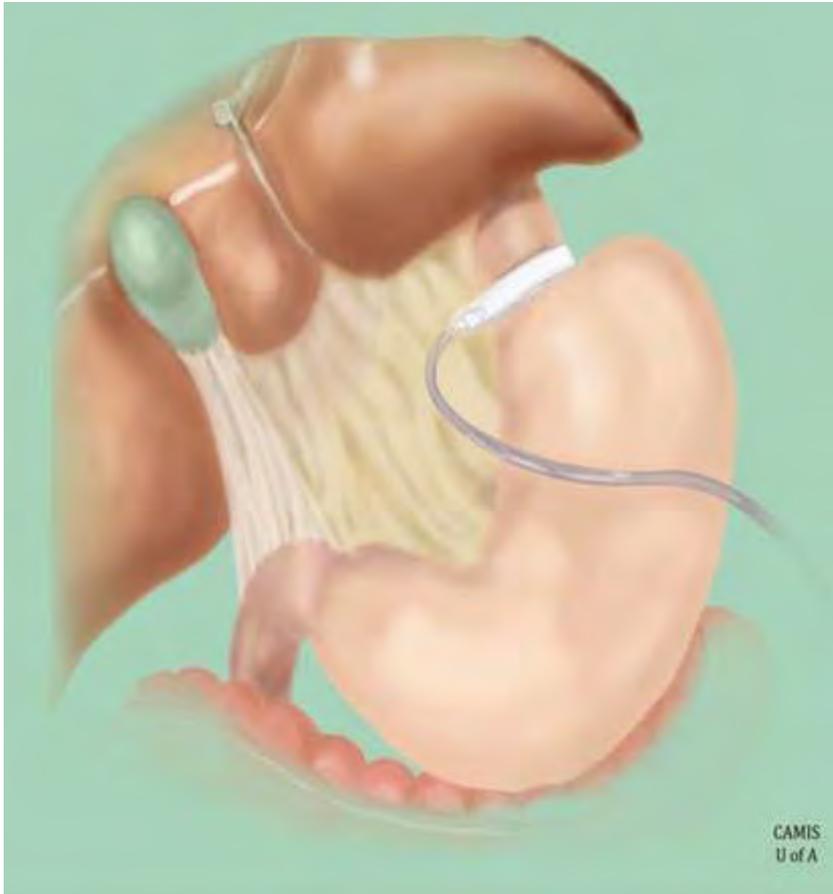
Figure 1: Volume of Bariatric Surgeries Performed in Canadian Hospitals, 2006–2007 to 2012–2013



Bariatric Surgery Basics

- For obese patients at high risk of morbidity and mortality who have not achieved adequate weight loss with lifestyle and medical management and who are suffering from the complications of obesity.
 - BMI ≥ 35 kg/m² + \geq one obesity-related co-morbidity
 - OR
 - BMI ≥ 40 kg/m²
- Can result in substantial weight loss, resolution of comorbid conditions, and improved quality of life.
- Complications include technical failure, bleeding, abdominal pain, nausea or vomiting, excess loose skin, bowel obstruction, ulcers, and anastomotic stricture.
- **Lifelong monitoring by a multidisciplinary team is essential.**

The Gastric Band



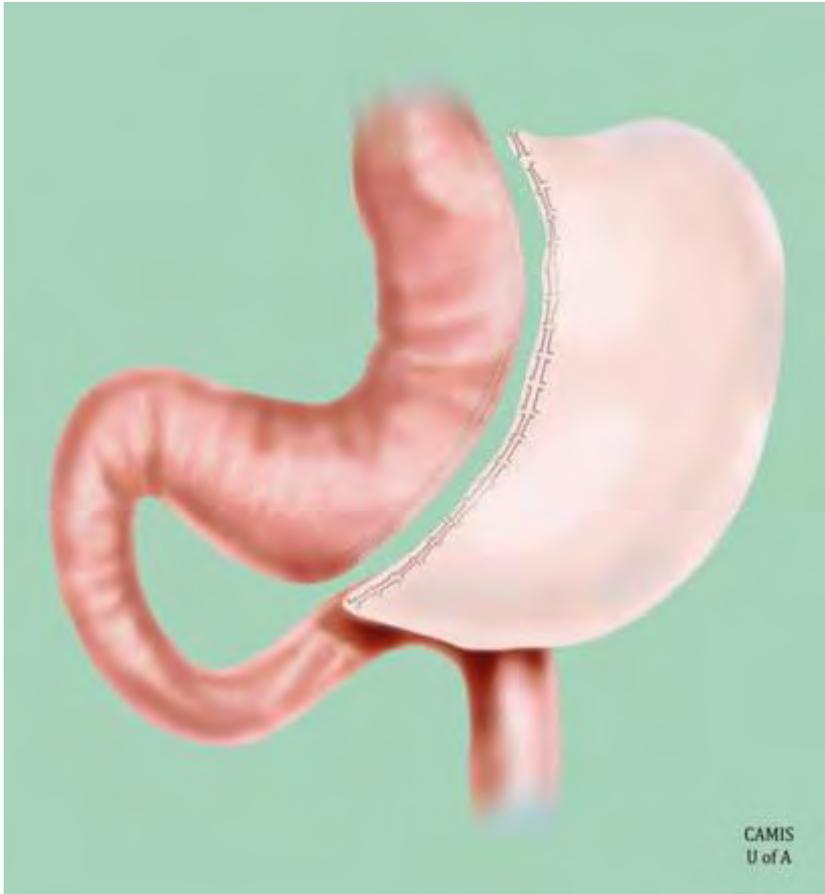
- Laparoscopic insertion of a silicone band at the upper end of the stomach creating a small pouch and a narrowed opening into the main stomach.
- The remainder of the stomach remains intact with no alterations to the intestine, leaving digestion and absorption unchanged.
- This is a restrictive procedure
 - Produces fullness and satiety with a smaller portion of solid food.
 - Delays emptying of food from the pouch into the stomach through the narrow opening, prolonging satiety.
- 15% of all bariatric surgeries in Canada 2012-13
- **Vitamin/mineral deficiencies are rare.** General recommendations include:
 - One multivitamin and mineral supplement daily
 - Additional calcium and vitamin D supplementation if required.

Roux-en-Y Gastric Bypass



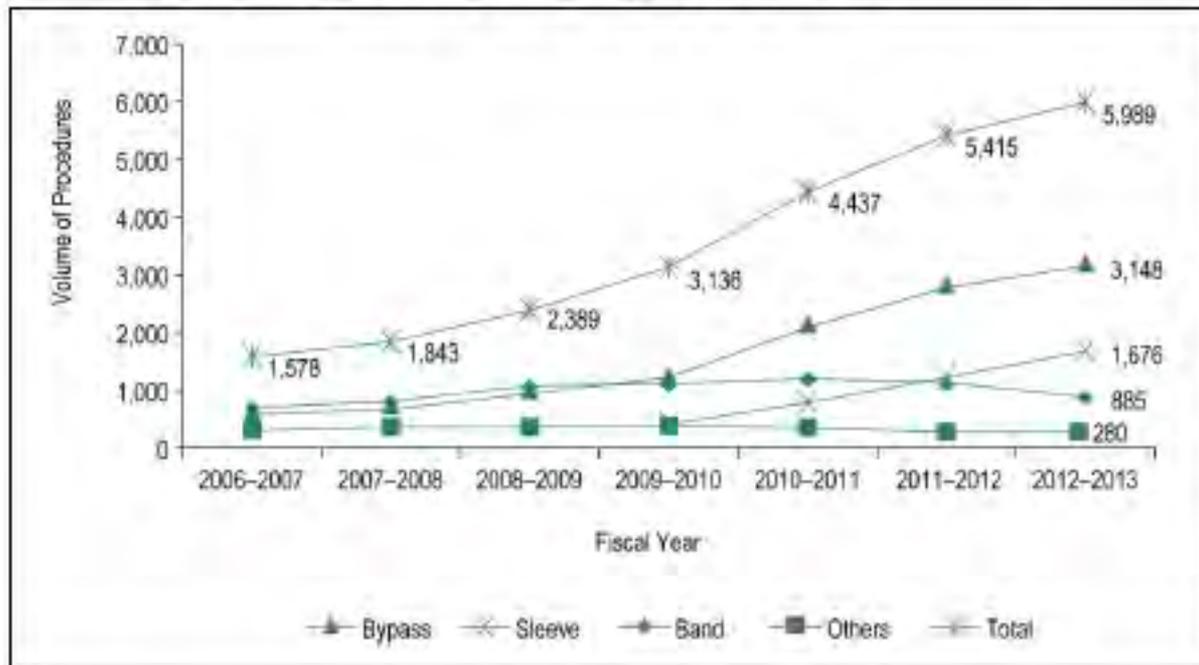
- Creates a small gastric pouch by stapling and dividing the stomach.
- The small intestine is dissected at about 100 to 150 cm from the stomach. The distal end is attached to the pouch and the proximal end is re-attached to the small intestine.
- All intakes completely bypass the stomach and duodenum, emptying directly into the jejunum.
- 53% of bariatric surgeries in Canada 2012-13
- **Digestion and absorption of iron, calcium, folic acid and vitamin B12 are impacted.**
General recommendations include:
 - One prenatal vitamin supplement daily (providing extra iron and folic acid within one pill)
 - Calcium citrate with vitamin D supplement daily to meet requirements
 - Additional iron and vitamin B12 supplementation if required.

Sleeve Gastrectomy

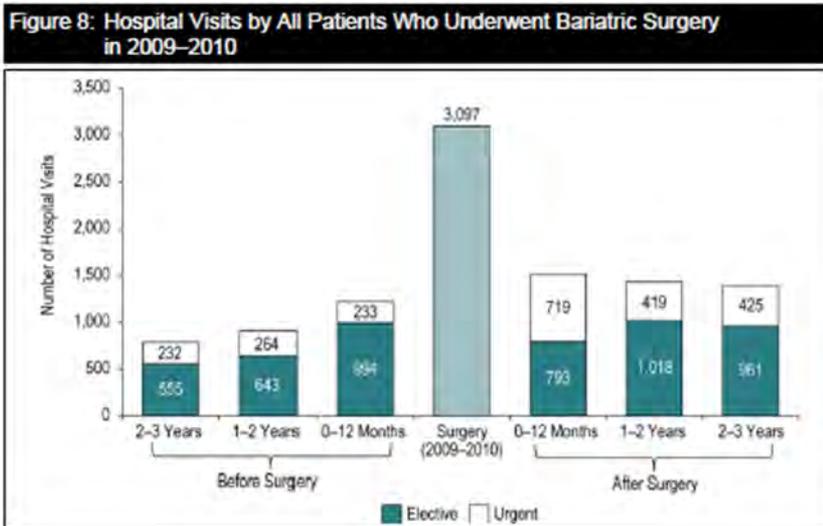


- This procedure creates a “sleeve” in the stomach, extending from the esophagus to the duodenum.
- The gastric remnant, approximately 80% of the stomach, is removed.
- Production of grehlin, a hormone involved in appetite, is reduced, resulting in decreased hunger and improved satiety.
- No alterations are made to the intestine, leaving absorption of food unchanged.
- 28% of bariatric surgeries in Canada 2012-13
- **Reduction of stomach acid may impact digestion and absorption of iron, calcium and vitamin B12.**
(recommendations as for R-en-Y)

Figure 4: Changes in Volume of Different Types of Bariatric Procedures Performed in Canadian Hospitals, 2006–2007 to 2012–2013



- What's counted?
 - 1st year: complications of surgery
 - 3 years: complications of weight loss (ie: removal of excess skin), surgical complications (ie: hernia)
 - Treatments deferred until after weight loss (ie knee replacement)



- Vitamin and mineral supplementation is recommended for all restrictive procedures and required for life for combined or malabsorptive procedures.
 - All recommendations are for oral supplementation
 - It is recognized that some patients require parenteral supplementation
- Blood work recommended to detect and monitor for vitamin and mineral deficiencies:
 - **Iron** (CBC-diff, ferritin, +/- TIBC and % sat)
 - Folate
 - Bone health (25-OH vitamin D, calcium and PTH)
 - **Vitamin B12.**

How to help patients avoid me...

- Continuing education



- Engage patients in monitoring
- Consider paper/ EMR checklists
- Lobby for better inter-disciplinary care