Bariatric Post Operative Complications
CBN Review
Session III
March 27, 2012
Complications

- Bariatric surgery = High risk procedure
- Patient populations also high risk due to comorbid conditions
- Complications can be a result of the comorbid conditions or surgical specific.
Hypovolemia

- Common postoperatively
- Symptoms
  - Thirst
  - Decreased skin turgor
  - Dry mucous membranes
  - LUO
  - Tachycardia
  - Hypotension
What are 3 areas of possible fluid deficit to be considered in the postoperative patient?
Three areas

- Preoperative deficits
- Operative losses
- Postoperative needs
Calculating Fluid Needs in Bariatric Patients

• Determine patients fluid deficits before, during and after surgery.

• Maintain fluids using the 4/2/1 rule
  ◦ 4cc/kg for the first 10 kg
  ◦ 2 cc/kg for the next 10 kg
  ◦ 1 cc/kg for the remainder
What is the typically considered normal urine output for a postoperative patient?
Urine Output

- Urine output of 30cc/hr is consider normal in postoperative patients
- This is **not the standard** for bariatric patients
- Ratio is based on 0.5 to 1.0 cc/kg per hour minimum for kidney excretion.
- Bariatric patients often changes acceptable urine output in the range of 50-100cc/hr.
Why is UO not useful in determining fluid loss in laparoscopic cases?
- Increased intra-abdominal pressure of the pneumoperitoneum
- Decreased urine output may be worsened by increased levels of rennin, angiotension II, aldosterone and catecholamines
What post-op pulmonary complications need to be considered?
• Effusion
• Atelectasis
• Resp. Insufficiency
• Pneumonia
Factors Contributing to Decreased Capacity

- Thick noncompliant chest wall

- Elevated diaphragm from increased intra-abdominal pressure due to increased visceral fat
What is the first and most frequent pulmonary complication after surgery?
Detecting Atelectasis

- Arterial hypoxemia on blood gases
- Low oxygen saturation on pulse ox
- Chest X-RAY may reveal clinically significant atelectasis
Minimizing Atelectasis

- Bilevel CPAP in ventilated patients
- IS
- Supplemental O2 via mask or NC
- Early ambulation
- Optimal pain management
- Elevation of head of bed
Pneumonia with Atelectasis

- Decreased ability to cough

- Colonization of resp. tract form prolonged intubation, presence of NG tube, acidosis or hypoxemia
Pneumonia

- Symptoms
  - Fever
  - tachypnea
  - Low O2 Saturation
  - Consolidation or effusions on chest X-RAY or CT scan
Preventing Pneumonia

- Smoking Cessation
- Weight loss prior to surgery
- Positioning of patient
- Decreased OR time
- Long acting local anesthetics
- IS
- **Get Out of Bed Early**
Prolonged Mechanical Ventilation

- Risk Factors
  - Male
  - > 50 yoa
  - BMI > 60
  - Revision of surgery/reoperation
Revision vs. Initial surgery

- Additional dissection
- Increased abdominal pressure
- Tissue edema
What is the most serious immediate postoperative complication in bariatric patients?
Intestinal Leak

- Is the second most frequent cause of bariatric death
- Complications of leaks
  - Peritonitis
  - Abscess/fistula formation
  - Multi-organ system failure
  - death
What is the most common site for leak?

- Gastrojejunal anastomosis
  - Related to technique such as staple versus suturing
  - Related to surgeons approach ant- versus retro colic and tension on the small bowel
Checking Anastomosis site

- Methylene blue
- Oxygen test
Drains

- JP Drain - at the anastomosis site
  - Assists with identifying leaks
  - If leaks occur, the drains the leach which increases the chances on non operative management
S/S Leak

- Abdominal Pain
- Nausea
- Left shoulder pain
- SOB
- Fever
- Tachy (>120 most sensitive sign with acute resp distress)
- Tachypnea
- Pleural effusion
- Hyperglycemia
- Oliguria
- Leukocytosis
Leak Detection Outside OR

- UGI- **
- Abdominal CT
- Return to OR
Leak Treatment

- Primary treatment is adequate drainage as long as no signs of sepsis
- If drainage not controlled
  - Make sure drain is functioning
  - Leak may need to be repaired
Medical Management of Leaks

- Resp or Vent support
- Fluid replacement according to inflammation response needs of the patient
- Nutrition support- centrally or G tube
- Antibiotic
- DVT prophylaxis
DVT

- Obesity and Surgery
- Advanced age
- Immobility
- Heart and lung failure
- Venous stasis disease
Testing for DVT

- Dulpex ultrasonography
- Contrast enhanced spiral CT
- Pulmonary angiogram - if weight limits are not exceeded of the fluroscopy table
Treating PE

- Immediate treatment of IV Heparin - monitor PTT
- Low molecular heparin should not be used
- Umbrella Filters
Preventing DVT/PE

- SCD’s
- Unfractionated Heparin
- Low molecular weight heparin
- **Early ambulation**
- Vena Cava placement in high risk pts pre op
Post Operative Bleed

- Complication of both open and lap surgeries
- S/S
  - Tachycardia
  - Hypotension
  - Oliguria
  - Hematemesis
  - Melena- tarry stools
  - Bloody drainage
  - Decreased hematocrit
Causes of Bleeding

- Intraperitoneal
  - Cut edges of gastric pouch or gastric remnant
  - Cut edges of the mesentery, spleen, or trochar sites especially near the epigastric vessels.

May not be apparent until after surgery and when the pressure effect of the pneumoperitoneum is reduced in lap patients.
Why is GB surgery considered to be a clean contaminated operation?
Wound Infection

- If a wound becomes infected from a skin flora
  - Staph Aureus is seen on the culture report

- Trochar Site infections
  - Often single trochar site is the port through which intestinal trimmings and instruments used in the GI tract are extracted
  - Maybe source of direct contamination of the subQ tissue with GI-tract flora.
Treating Wound Infections

- Opening the wound - allows for adequate drainage
- If erythema/ purulent drainage - antibiotics
- Skilled dressing changes
Preventing Infections

- Antibiotics
- Surgical technique- removal of contaminated instruments, avoiding spillage and copious irrigation of the wound prior to closure
- Optimal control of comorbid conditions
Oliguria

Caused by:

- Hypovolemia - consider first
- Sepsis from a leak
- Acute tubular necrosis from intraoperative hypotension
- rhabdo
Retained Foreign Body

- Surgical instrument or sponge
  - More likely when
    - Pt is obese
    - Surgical plan changes
    - Surgery is emergent

- Routine X-ray at end of case - esp. if converted from lap to open

- Item counts
Obstruction

- SBO is unusual immed post op in open cases but may occur in lap case.
- The obstruction is noted:
  - Narrowing of the small bowel anastomosis
  - Narrowing at the level of the transverse colon
  - Twisted limb of bowel
Bowel Obstruction

- S/S
  - Nausea
  - Vomiting
  - *Inability to tolerate fluid* (early in post op period)
  - Abnormal UGI

- Requires immediate surgery
Sepsis

- Most common cause of sepsis:
  - Post Op Leak

- Preventing the progression of sepsis:
  - Resp support (vent)
  - Hemodynamic monitoring - Art line
  - Fluid replacement supporting 0.5 cc/kg/hour
  - Blood/urine and sputum cultures - assessing for other causes
  - Antibiotics
Sepsis

- Determining Cause:
  - CXR - rule out pneumonia
  - Abd CT - rule out leak or abscess
Death

- Open procedures and male patients slightly higher death rate.
- Most common cause of death - PE 50%
Nerve Damage

- Positioning injury during surgery
  - Compression or stretching of the nerve

- Most common:
  - Brachial Plexus
  - Ulnar Nerve
  - Sciatic Nerve
Nerve Injury

- **Brachial Plexus**
  - Related to turning the head excessively or abduction of the arm during the procedure.

- **Ulnar Nerve**
  - Occurs from pushing on arm trying to be closer to the patient or from excessive positioning trying to move arm out of the way.

- **Sciatic Nerve**
  - Pressure on nerve during prolonged procedure.
Preventing Nerve Injury

- **Positioning**
  - Special attention to pressure areas

- **Padding**
  - Foot boards, arm boards to prevent slippage, strapping

- **Appropriate sized equipment**
Pain Control

- Promoting pain control
  - IV narcotics
  - Sedatives for anxiety or agitation
  - Non-steroid anti-inflammatory medications
  - Thoracic epidural anesthesia
  - Key is pain control with respiratory depression
Other Complications

- Hernias
  - Internal, incisional or staple line
- Strictures at suture lines
- Pouch Dilatation or fistulas
- Urinary tract stones
- Cholelithiasis
  - Most common during rapid weight loss
Gastrointestinal Complications

- Dumping Syndrome
  - Typically associated with eating particular foods
  - Very common - up to 85% at some point
  - Early Dumping - 30-60 minutes after food
    - Sweating, lightheadedness, nausea, diarrhea, tachy, palpitations, cramping, audible bowel sounds
  - Late Dumping - 1-3 hours after food
    - Often assoc wit hypoglycemic event, sweats, shakiness, hunger, loss of concentration, fainting
References