Signs and Symptoms of Complications for Bariatric Surgery

Description
This course describes the bariatric surgery process, along with an explanation of possible complications, and signs and symptoms related to bariatric surgery. It will take approximately 30 minutes to complete this course.

Instructions
• This course is tested and guaranteed to function on an Aurora network PC
• [How to navigate](#) this course
• This course includes a video that does have sound. Please complete it at a PC with speakers, a headset or ear buds.

Technical Contact
If you have technical questions, please contact the Service Desk at 414-647-3520 in Milwaukee or 1-800-889-9677.

Content Contact
Rebecca Coon BSN, RN, CBN
Bariatric Coordinator, ABMC

Janice Klosowski BSN, RN
Bariatric Program Manager, ASMC
Created: June 2012
Updated: February 2018
Course Objectives

The audience for this course includes *all* staff involved in direct care of the bariatric surgical patient.

After completing this course you will be able to:

• Identify indications for bariatric surgery.
• Distinguish differences between bariatric surgical procedures.
• Describe perioperative and post operative care and recognize important signs and symptoms of bariatric surgical complications.
Body Mass Index (BMI)

BMI is the standard tool that is used to classify body weight.

Normal weight BMI 18.9-24.9
Overweight  BMI 25-29.9
Obese      BMI 30-34.9
Morbidly obese BMI > 35 with an associated comorbidity or BMI > 40
Indications for Bariatric Surgery

Generally to qualify for bariatric surgery, patients must have a BMI $\geq 40$, or $\geq 35$ when associated with a serious medical comorbidity such as

- Type 2 Diabetes
- Sleep apnea
- Hypertension
- Hyperlipidemia
- Cardiovascular disease
What is Surgical Weight Loss?

• Invasive surgery that helps a person lose weight in two ways
  • Limiting the amount of food the stomach can hold – Restriction
  • Reducing the way foods are being utilized by the body – Malabsorption

<table>
<thead>
<tr>
<th>Restriction</th>
<th>Malabsorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Decreases appetite</td>
<td>• Lowers the body’s ability to absorb nutrients from food</td>
</tr>
<tr>
<td>• Reduces the amount of food that individuals eat at each meal</td>
<td>• Assists in avoiding high sugar and high fat foods by making the individual feel sick after eating them</td>
</tr>
<tr>
<td>• Gives the feeling of being full even with a small amount of food</td>
<td></td>
</tr>
</tbody>
</table>
Bariatric Surgery Procedures

There are a number bariatric procedures that may be performed

- **Restrictive** – this procedure reduces the capacity of the stomach and reduces the amount the patient can eat.
  - Adjustable Gastric Band
  - Vertical Sleeve Gastrectomy

- **Combination** (Restrictive and Malabsorptive) – this procedure both reduces the capacity of the stomach and limits the absorption of foods in the intestinal tract by "bypassing" a portion of the small intestine.
  - Roux-en-Y Gastric Bypass
  - Duodenal Switch (DS)

- *Not all procedures are performed at all locations. Please check your specific bariatric program.*
Adjustable Gastric Band

- Restrictive
- 30-50% loss excess body weight
- Reversible
- The majority of complications of the Lap Band occur after the first 30 days post-op
# Adjustable Gastric Band

<table>
<thead>
<tr>
<th>Immediate Complications</th>
<th>Long-term Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Band too tight</td>
<td>• Band obstruction</td>
</tr>
<tr>
<td>• Port infection</td>
<td>• Nausea vomiting if band is too tight</td>
</tr>
<tr>
<td>• Port or tube leaking</td>
<td>• GERD</td>
</tr>
<tr>
<td></td>
<td>• Vitamin Deficiencies (B12, Iron, Calcium, Vitamin D)</td>
</tr>
<tr>
<td></td>
<td>• Gastroesophageal Dilatation</td>
</tr>
<tr>
<td></td>
<td>• Band Slippage</td>
</tr>
<tr>
<td></td>
<td>• Tubing break</td>
</tr>
<tr>
<td></td>
<td>• Poorly positioned port</td>
</tr>
<tr>
<td></td>
<td>• Port or tube leaking</td>
</tr>
<tr>
<td></td>
<td>• Band erosion</td>
</tr>
</tbody>
</table>
Vertical Sleeve Gastrectomy (Sleeve Gastrectomy)

This procedure is usually performed laparoscopically, however can be done as an open procedure. Under general anesthesia, the surgeon will introduce a tube down the esophagus and place it along the curvature of the stomach.

The surgeon uses this tube as a guide and will then lay a row of staples to separate approximately 85% of the stomach.
Vertical Sleeve Gastrectomy (Sleeve Gastrectomy)

This portion of the stomach is removed which leaves a small thin tube or “sleeve” which will restrict the amount of food a person can take in. This surgery is non-reversible.
# Potential Complications for Sleeve Gastrectomy

## Immediate Complications
- Bleeding
- Gastric Leak
- Infection
- DVT
- Pulmonary Embolism

## Long Term Complications
- GERD
- Gallstones
- Strictures
- Dehydration
- Vitamin Deficiencies (B12, Iron, Calcium, Vitamin D)
- Protein Deficiency
Roux-en-Y Gastric Bypass (Gastric Bypass)

A non-reversible combination procedure. The surgeon will create a 1 to 2 oz. stomach pouch by laying a double row of staples to separate this new pouch from the stomach remnant.

The stomach remnant and first part of the small intestine (duodenum) is then bypassed.

The surgeon then attaches part of the small intestine (jejunum) to the new stomach pouch.
Roux-en-Y Gastric Bypass (Gastric Bypass)

The surgeon will then reattach the duodenum further down on the jejunum.

As a result, the patient will experience some mild malabsorption in addition to being restricted in the amount of food able to be consumed, leading to weight loss.
## Complications of Roux-en-Y Gastric Bypass

<table>
<thead>
<tr>
<th>Immediate Complications</th>
<th>Long Term Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bleeding</td>
<td>• Dumping Syndrome</td>
</tr>
<tr>
<td>• Gastric Leak</td>
<td>• Gallstones</td>
</tr>
<tr>
<td>• Infection</td>
<td>• Marginal Ulcers</td>
</tr>
<tr>
<td>• Pneumonia</td>
<td>• Internal Hernia</td>
</tr>
<tr>
<td>• DVT</td>
<td>• Stricture</td>
</tr>
<tr>
<td>• Pulmonary Embolism</td>
<td>• Vitamin Deficiencies (B12, Iron, Calcium, Vitamin D)</td>
</tr>
<tr>
<td></td>
<td>• Protein Deficiencies</td>
</tr>
</tbody>
</table>
Duodenal Switch

This combination procedure uses staples to reduce the stomach size to about 20% of its normal size. This limits the amount of food that can be consumed.

Food still passes through the stomach to its normal entry into the intestine. It is then re-routed and reconnected farther down the intestine. This creates significant malabsorption of calories.
## Complications of Duodenal Switch

<table>
<thead>
<tr>
<th>Immediate Complications</th>
<th>Long Term Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bleeding</td>
<td>• Dumping Syndrome</td>
</tr>
<tr>
<td>• Gastric Leak</td>
<td>• Gallstones</td>
</tr>
<tr>
<td>• Infection</td>
<td>• Marginal Ulcers</td>
</tr>
<tr>
<td>• Pneumonia</td>
<td>• Internal Hernia</td>
</tr>
<tr>
<td>• DVT</td>
<td>• Stricture</td>
</tr>
<tr>
<td>• Pulmonary Embolism</td>
<td>• Protein Deficiencies</td>
</tr>
<tr>
<td></td>
<td>• Foul Smelling Gas and Stool</td>
</tr>
<tr>
<td></td>
<td>• Vitamin Deficiencies (B12, Iron, Calcium, Vitamin D)</td>
</tr>
<tr>
<td></td>
<td>• Gastric distention</td>
</tr>
<tr>
<td></td>
<td>• Small Bowel obstruction</td>
</tr>
</tbody>
</table>
Most Common Complications of Bariatric Surgery

• Dehydration
• Pneumonia
• Gastric Leak
• DVT
• Pulmonary Embolism
• Bleeding
• Dumping Syndrome
• Protein Deficiencies
• Vitamin Deficiencies
Complication - Dehydration

Signs and symptoms

- Low urine output less than 30 ml/hr
  - Notify surgeon if patient has less than 120 ml of urine output over four hours
- Hypotension
- Headache
- Tachycardia
  - Notify surgeon if patient has a sustained heart rate >120 during rest.
- Visibly dry mouth and lips
Complication - Pneumonia

Pneumonia

- Signs and symptoms
  - Fever
    - Notify surgeon for fever > 101.0
  - Shortness of breath, low oxygen saturation.
    - Encourage use of incentive spirometer.
    - Teach patient coughing and deep breathing.
    - Encourage the patient to ambulate to promote lung expansion.
  - Tachycardia
    - Notify surgeon if patient has a sustained heart rate >120 during rest.
- Nausea
  - Notify surgeon if patient experiences nausea not relieved by medication.
Complication – Gastric Leaks

Gastric Leaks

- Carries high risk of morbidity and mortality.
- More common in patients who have diabetes mellitus, cardiac or renal failure, peripheral arterial occlusive disease or on glucocorticoids.
- Due to the increased technical difficulty of a revision from one bariatric surgery to another, this complication occurs more frequently following a revision than a primary surgery.
- Most commonly occurs at the gastrojejunostomy site.
Complications – Gastric Leaks

Signs and symptoms of a leak

- Fever >101
- Peritonitis
- Abdominal pain that radiates to the left shoulder
- Nausea
- Shortness of breath
- Tachycardia – sustained heart rate >120
- Low urine output – urine output less than 30 ml/hr
- Tachypnea

Upper GI is the best tool to evaluate for leaks.
If these symptoms are noted notify the surgeon immediately.
Complications - DVT

DVT – Deep Vein Thrombosis

• Signs and symptoms
  • Swelling of the leg or along a vein in the leg
  • Pain or tenderness in the leg, which may be felt when standing or walking
  • Increased warmth in the area of the leg that's swollen or painful
  • Red or discolored skin on the leg

• Early and frequent ambulation is important to help prevent DVT’s.
• Patients are required to wear Sequential Compression Devices (SCD’s) at all times when not ambulating.
Complications - DVT

DVT Prevention

- Early and frequent ambulation.
- Use of Sequential Compression Devices
- Lovenox or heparin injections
Complications - Pulmonary Embolism (PE)

Pulmonary Embolism
- The leading cause of PREVENTABLE death following bariatric surgery
- Signs and Symptoms
  - Unexplained shortness of breath
  - Pain with deep breathing
  - Hemoptysis
  - Chest pain
  - Tachypnea
  - Tachycardia

If these symptoms are noted notify the surgeon immediately.
Complications - Pulmonary Embolism

Pulmonary Embolism (PE)

- Prevention
  - Early and frequent ambulation.
  - Use of Sequential Compression Devices
  - Insertion of Inferior Vena Cava Filters in high risk patients
  - Lovenox or heparin injections
Complications – GI Bleeding

Postoperative bleeding.

- Signs and symptoms
  - Tachycardia – greater than 120 bpm
  - Hypotension
  - Oliguria
  - Hematemesis
  - Melena
  - Decreasing hemoglobin and hematocrit
  - Pain
  - Increasing bloody JP drain output

- Notify surgeon if these symptoms are observed.
Care of the Bariatric Surgical Patient

- Patient must ambulate four to six times a day
- SCD’s must be on if the patient is not ambulating
- Monitor strict Input and Output

Notify surgeon if:
- Heart rate <60 or >120
- SBP is less than 90 mmHg or greater than 160 mmHg
- Pulse ox is less than 92%
- Urine output is less than 30 mL/hour
- JP drainage increases or changes color/appearance
Long Term Complications

Vitamin/mineral deficiencies
• Most common include
  • B12
  • Calcium
  • Vitamin D
  • Iron
Complications  Vitamin B\textsubscript{12} Deficiency

- After bariatric surgery, B\textsubscript{12} is not well absorbed, leading to potential deficiencies if a supplement is not consumed.
- Deficiencies may lead to fatigue, anemia or permanent nerve damage
- Regular blood work is done to test for deficiency
- Symptoms of B\textsubscript{12} deficiency, may be irreversible
  - Fatigue
  - Tingling in the extremities
  - Disorientation
  - Shortness of breath
Complications Vitamin D<sub>3</sub> Deficiency

- After bariatric surgery, Vitamin D<sub>3</sub> is not well absorbed, leading to potential deficiencies if a supplement is not consumed.
- Regular blood work is done to test for deficiency.
- Low levels of Vitamin D<sub>3</sub> lead to an increased risk of cardiovascular disease and cognitive impairment.
- Symptoms of a Vitamin D<sub>3</sub> deficiency may be subtle:
  - Bone pain
  - Muscle weakness
Complications: Calcium Deficiency

- After bariatric surgery, Calcium is not well absorbed, leading to potential deficiencies if a supplement is not consumed.
- Deficiencies may lead to weak bones and irregular heart rhythm.
- Regular blood work is done to test for deficiency.
- Symptoms of a Calcium deficiency.
  - Muscle cramping
  - Muscle weakness
  - Fatigue
  - Tingling in extremities
Complications: Protein Deficiency

- Due to the size of the new stomach, it may be difficult for individuals to eat enough protein rich food.
- Deficiencies may lead to muscle weakness and hair loss.
- Regular blood work is done to test for deficiency.
- Symptoms of a Protein deficiency:
  - Hair loss
  - Muscle weakness
  - Fatigue
  - Slow or stalled weight loss
If you have questions or concerns about the care of the bariatric surgical patient please contact the bariatric surgeon’s office.
Summary

By now you should have a good understanding of how to care for a bariatric surgery patient. Taking measures to prevent, recognize and treat the complications of bariatric surgery make a huge difference in your patient’s recovery.
Knowledge Check
Quiz - 10 questions

Last Modified: Apr 18, 2018 at 09:22 AM

PROPERTIES

On passing, 'Finish' button:  Close Window

On failing, 'Finish' button:  Goes to Next Slide

Allow user to leave quiz:  At any time

User may view slides after quiz:  At any time

Show in menu as:  Single item

Edit in Quizmaker  Edit Properties