PHARMACISTS AND BARIATRIC SURGERY: WHAT YOU NEED TO KNOW

Bariatric surgeries have become more common due to the high prevalence of obesity and its associated disease states in the United States. With the increased number of surgeries performed, the technique has improved and the 30-day mortality rate is 0.05%. While the mortality rate is minimal, morbidity in the perioperative period is about 5%. Proper management of complications, such as anastomotic leak and wound infection, is imperative. Pharmacists are specially trained to evaluate pharmacokinetic and pharmacodynamic changes that may affect bariatric patients in the perioperative and postoperative period. This issue of CLIPS briefly summarizes an article that reviews medication related aspects of the perioperative period of bariatric surgery and how to appropriately manage these patients. If you need further information, please contact the Samford University Drug Information Service at (205) 726-2659.


Bariatric Procedures

- Bariatric surgeries can be restrictive to decrease the size of the stomach, malabsorptive to bypass part of the small intestine, or a combination of restrictive and malabsorptive.
- Roux-en-Y gastric bypass (RYGB) is the most common type of bariatric procedure and is classified as combined restrictive and malabsorptive.
- Another common type of bariatric surgery is gastric banding, a restrictive procedure, that can be reversible.
- The third most common procedure is sleeve gastrectomy, which can later be converted to RYGB.
- All types of bariatric surgery require unique management and adjustment of medications.
- Some important characteristics when considering dosing of medications for obese patients include increased adipose tissue, lean body mass, cardiac output, total body water, and glomerular filtration rates.

Pain Management

- The type of pain control needed depends on the type of procedure. Generally, laparoscopic procedures require less pain medications than open procedures.
- Opioids can be delivered through a patient controlled analgesia (PCA) pump or by the oral route. Patients undergoing this surgery usually require increased doses of medications due to their obesity.
- Non-opioid options include nonsteroidal anti-inflammatory drugs (NSAIDs). Ketorolac is an option, but is not ideal due to the increased risk of gastric bleeding associated with bariatric surgery. Topical NSAIDs and celecoxib are safer options.
- Acetaminophen given intravenously is another non-opioid option that has been shown to decrease the amount of opioids used in the first 24 hours after surgery.
- The use of lidocaine and dexmedetomidine during surgery has also reduced the amount of opioids used in the first 24 hours after surgery. However, dexmedetomidine also causes a significant drop in blood pressure and heart rate.

Infection

- Surgical site infections are the most common infections associated with bariatric procedures. Risk factors include a body mass index (BMI) > 50 kg/m², delayed antibiotic administration, use of epidural analgesia, sleep apnea, bipolar disorder, vancomycin prophylaxis, and longer surgery times.
- Surgical prophylaxis guidelines for patients undergoing bariatric surgery recommend using two grams of cefazolin in patients weighing 80-119 kg and three grams in patients weighing 120 kg or more.

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Infection (continued)

- Skin and soft tissue infections are also common with all surgeries and require broad empiric antibiotics. Coverage should include gram-positive aerobic, gram-negative aerobic, and gram-negative anaerobic activity and be started within 48 hours of infection to decrease mortality.
- *Heliobacter pylori* infections are more common in the obese population and are screened for before surgery. Eradication regimens may be used before surgery and are made up of dual antimicrobials, usually clarithromycin and amoxicillin, and a proton-pump inhibitor.

Nausea and Vomiting

- Risk factors for postoperative nausea and vomiting (PONV) include younger age, female, use of emetogenic inhalation agents, adverse effects from opioids, intraoperative fluid replacement, and medication withdrawal.
- Serotonin type-3 receptor (5-HT₃) antagonists, like ondansetron, are the most commonly prescribed antiemetic for PONV. Other options for PONV include promethazine, scopolamine, and aprepitant.

Venous Thromboembolism

- Venous Thromboembolism (VTE) is a concern with bariatric surgery as it can occur in up to three percent of all bariatric patients. Risk factors include obesity, older age, male, previous VTE, sleep apnea, history of smoking, and surgery lasting greater than 180 minutes.
- Heparin is usually utilized during the preoperative period. Low molecular weight heparins, like enoxaparin, are used for postoperative VTE prophylaxis.
- Other anticoagulants, such as dabigatran and rivaroxaban, can also be used as postoperative VTE prophylaxis. However, there is not much data supporting these agents and several require absorption in areas of the small intestine that is compromised by bariatric surgery.
- Non-pharmacological options include sequential compression devices (SCDs) and early ambulation, which are commonly used with pharmacologic agents. Inferior vena cava filters can also be used, but are often reserved for patients at an abnormally high risk for a VTE.

Bleeding

- Severe bleeding occurs in very few bariatric surgery patients, but should be monitored for up to 30 days after surgery. Symptoms include tachycardia, bowel obstruction, and low hemoglobin and hematocrit levels.
- Management of severe bleeding can be achieved by discontinuation of anticoagulants, reversal of anticoagulation, volume replacement with packed red blood cells and fresh frozen plasma, and monitoring of hemoglobin and hematocrit.

Long-Term Medications

- Once a patient undergoes the bariatric procedure, chronic medications may need to be adjusted. Most commonly, medications need to be adjusted due to decreased absorption and difficulty swallowing medication.
- Many patients in this setting are on antihypertensives and may require a decreased dose following surgery. Often diuretics and extended-release medications are discontinued following bariatric procedures.
- Diabetic patients must be monitored extremely closely following bariatric surgery due to the risk of becoming hypoglycemic. Patients on sulfonylureas often are required to discontinue this class and patients on insulin may require dose reduction up to 75% of his or her normal dose.

Conclusions

- Managing bariatric surgery patients is a team effort among the surgeon, dietitians, bariatric coordinators, medical consultants, and pharmacists.
- Pharmacists in the inpatient setting can provide insight to weight-based dosing of antibiotics and VTE prophylaxis agents, changing dosage forms of medications, and full medication reconciliation.
- Another area where pharmacists are uniquely qualified to help patients is long-term follow up. Bariatric surgery patients will require dosage adjustments throughout the postoperative period, when undergoing physical changes that may affect medications and disease states.

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