

Considerations for a pharmacist when managing the care of a post-bariatric surgery patient

Overview:

Bariatric surgeries are becoming more prevalent in Canada. Bariatric surgeries are relatively safe and effective procedures that restrict the stomach and/or cause decreased absorption of calories to help weight loss. Bariatric patients are complex having numerous comorbidities, as well as anatomical and physiological alterations that make medication management difficult for the pharmacist. This newsletter will explain the different procedures and provide considerations on how surgery affects comorbidities and the pharmacokinetics of medications, as well as provide common drug and nutrition recommendations to help the pharmacist understand the complex bariatric condition. Ultimately the goal is to have the pharmacist become comfortable enough to be able to assist in optimizing care as part of a multidisciplinary team for a bariatric patient.

Case:

A 47 year old woman walks into your pharmacy with a prescription for rabeprazole (new), atorvastatin (refill), citalopram (refill), and ramipril (refill). She is complaining of mild heartburn. She also states that her depression is becoming an issue once again. She informs you that she had bariatric surgery two months ago. How do you handle this patient? How does her surgery affect medications? Are enteric coated products such as rabeprazole a concern? Is she optimized on her current medications?

Introduction:

With 1 in 4 Canadians living with obesity, the number of patients undergoing bariatric surgery is rapidly growing.^{1,2} From 2006 to 2014, there has been a 4-fold increase in procedures, with 6525 surgeries being done Canada-wide in 2014.² In Saskatchewan, since 2009 there have been 358 surgeries, of which 101 were performed in 2014.³ This means that the likelihood of dealing with a complex post-bariatric patient within your pharmacy practice setting is also increasing. Many pharmacists are unsure how to manage these patients' medications since many pharmacists are unfamiliar with the surgery itself and its effects on medications.

Bariatric surgery is a broad term for an operation that involves either restricting the size of the stomach, increasing malabsorption, or both.⁴ There are three surgeries available in Canada: Roux-en-Y (aka gastric bypass, RYGB), sleeve gastrectomy (SG), and adjustable gastric banding.³ In

Saskatchewan, only Roux-en-Y and sleeve gastrectomy are covered by Saskatchewan Health.⁵ Roux-en-Y decreases the stomach to the size of a small pouch and bypasses the remainder of the stomach, and the first half of the small intestine.⁶

For a simple and effective diagram of RYGP go to:

<http://www.bariatric-surgery-source.com/laparoscopic-gastric-bypass-surgery.html>

Sleeve gastrectomy removes 80-85% of the stomach forming a narrow banana-like tube that connects the esophagus to the small intestine.⁷ Compared to SG, RYGB results in greater weight loss in less time, and is more effective in the resolution of co-morbidities, but has greater risk of complications.

For a simple and effective diagram of SG go to:

<http://www.bariatric-surgery-source.com/gastric-sleeve-surgery.html>

The caloric restriction and malabsorption (more so in RYGB) caused by both of these procedures generates dramatic weight loss, as well as significant improvement with other disease states such as diabetes, hypertension, dyslipidemia, and many more.^{6,7} Furthermore, as a result of these procedures, doses, routes of administration (ROA), and/or dosage forms that were effective prior to the surgery may need to be adjusted; some medications may even need to be discontinued.⁸ The restrictive, malabsorption, and disease state changes prompt several general recommendations and considerations with regards to medications and nutritional needs. There are no specific recommendations to optimize medications, but a pharmacist should be aware of the common considerations to help optimize their patients' health and medications.

Disease State Considerations:

- **Type 2 Diabetes Mellitus(T2DM)** – Remission of T2DM (A1c of <6.5 %) after RYGB and SG procedure is 67 and 56 % at 3 months, 81 and 80 % at 36 months, respectively.⁹ Many patients are in remission prior to weight loss.¹⁰ This means that many patients taking oral hypoglycemic medications may need to discontinue their medications or at least decrease their dose.¹¹
- **Hypertension** – 62% of patients' hypertension is resolved, and 79% patients have at least an improvement of their blood pressure within the first year.¹²
- **Dyslipidemia** – 70 to 94% of patients show improvement with hyperlipidemia, hypercholesterolemia, and hypertriglyceridemia.¹²
- **Depression** – Depression does significantly improve post-surgery in most patients.¹³ However, it is important to continue to monitor and support those who may be struggling with the sudden life changes, loss of comfort eating, and changes in social environment (e.g. family feasts).¹⁴
- **Gastroesophageal reflux disease (GERD)** – Symptoms of GERD post-operative are variable. Pre-existing GERD can be resolved (50-65% patients), yet 11-35% of patients develop new GERD symptoms (more so in SG).^{15,16} Proton pump inhibitors (PPIs) have been shown to be effective treating mild to moderate GERD; in severe cases high dose PPI and prokinetics, behavioural and lifestyle changes may be required.^{11,17}

- **Other comorbidities** – Obstructive sleep apnea, and asthma either resolve or improve in 80% to 100% of patients. Arthritis, back, or extremity pain improves in 52% to 73% of patients.¹⁸

A pharmacist should routinely follow up with their post-operative bariatric patients and closely monitor for signs and symptom improvement (via patient labs, records, or discussions) of any comorbidities. The goal is to assist the health care team by providing recommendations of how and when to safely discontinue unnecessary medications or to optimize drug dosages to ensure a safe and effective medication therapy.

Pharmacokinetic (PK) Considerations:

- The general consensus is that bariatric surgery may increase, decrease, or leave unchanged the rate and/or extent of drug absorption, or the rate of drug clearance.¹⁹ There are many factors that need to be considered²⁰:
 - decreased area of absorption (RYGB missing duodenum and part of jejunum);
 - increased motility (affects long-acting dosage forms);
 - increased gastric pH from the surgery or PPI use (effect on absorption of ketoconazole, isotretinoin, mefloquine, phenytoin, selegiline, B₁₂ or ferrous salts);
 - changes in drug dissolution and solubility;
 - gastric and intestinal enzymes to activate prodrugs (simvastatin).

Although the bioavailability may be altered, it is not clear if the alterations are clinically significant.¹⁹ The pharmacist should monitor for therapeutic effect to potentially detect absorption and other PK issues. If an appropriate dose results in little to no effect, a recommendation to increase dose, change dosage form, or ROA may be warranted.²¹

General Medication Considerations:

- While healing, generally within the first two months, medications should be provided in chewable or liquid form whenever possible.¹² Watch out for high concentrations of non-absorbable sugars (e.g. sorbitol) in liquid formulations, which may cause diarrhea.²²
- After healing has occurred, the patient can progress to tablets and capsules as tolerated. Generally, pills smaller than a Smartie™ should not get stuck. Splitting larger pills into smaller halves is also feasible.²²
- More so with RYGB due to potential unpredictable absorption of the bypassed area, enteric-coated and extended-release formulations should be changed to an equivalent dose of immediate-release capsules, crushable tablets, or oral liquid.^{12,22,23}
- Nonsteroidal anti-inflammatory drug (NSAID) use is not recommended as post-bariatric surgery patients are at risk of marginal ulceration and gastrointestinal (GI) bleeds, which can be serious.¹⁷ Acetaminophen is the recommended choice for pain.^{12,22,23} If short term NSAIDs cannot be avoided, addition of a PPI is advisable.^{17,23}
- Other ulcerogenic drugs, such as corticosteroids and antiplatelets should be well-scrutinized before using and, similar to NSAIDs, used in conjunction with PPIs when needed.^{17,23}

- When considering oral bisphosphonates, risk vs. benefit needs to be assessed for each patient as the reduced gastric pouch is more vulnerable to GI ulceration. The efficacy of bisphosphonates in post-operative bariatric patients has not been studied. Intravenous bisphosphonates should be considered if required^{12,21-23}

Nutritional Considerations:

- Rapid gastric emptying, reduced production of intrinsic factor, decreased gastric acid secretions, and decreased micronutrient intake lead to nutritional deficiencies after surgery.²³
- The most critical deficiencies are vitamins B₁, B₁₂, D, folate, iron and calcium.²²
- Post-operative monitoring to prevent mineral and vitamin deficiencies is important. Yearly tests monitoring for anemia and serum vitamin levels for the first 5 years is recommended, although if at high risk of deficiencies the frequency may be increased.¹²
- Oral tablet supplements of each micronutrient listed above can be given to prevent deficiencies. Parenteral injection, chewable, and/or liquid dosage forms are available options if needed.
- Recommended oral daily doses: Vitamin B₁ 50 mg, Vitamin B₁₂ at least 350 mcg, Vitamin D 400-1000 IU, folate 1-2 mg, iron >65 mg elemental iron, and calcium 1200mg. Calcium citrate is preferred over calcium carbonate due to better absorption at higher gastric pH.²⁴

Case Review:

Keeping in mind the considerations above as well as getting a full surgery, disease, and medication history, the pharmacist should be comfortable in managing and optimizing the care of a bariatric patient.

Patient Information:

Female, 47 years old, 2 month post-op sleeve gastrectomy

Chief Complaint:

She is experiencing mild-moderate GERD several times/week. Lately, she feels more blue and tired than usual. She is concerned as her depression is not as well controlled as it has been in the past; she is not sure why as nothing really has changed.

History of present illness:

Had BMI of 53 (5' 3", 300 lbs) with T2DM, hypertension, dyslipidemia, joint pain, depression, eczema. She had tried diet and exercise to only minimal to no gains. Since the surgery she has lost 20 lbs so far (BMI 49.6). She is happy with her progress.

T2DM: went into remission within 1 month post-op.

Hypertension: improved after 3 weeks, was feeling dizzy, so she stopped HCTZ (physician directed). Blood pressure is at 129/78.

Dyslipidemia: Doctor told her that her cholesterol is good.

Depression: has been well managed for 3 years on 20 mg citalopram, but does not seem to be working as well lately.

Joint Pain: had troublesome knee pain, but it has improved with weight loss with only occasional pain from time to time.

Heartburn: never had much heartburn prior to the surgery, but it has become persistent (2-3 episodes/week) over the last month or so. She had an endoscope done last week, and there were no signs of ulcers and no apparent complications with the surgery.

Past medical history:

Rx

T2DM: stopped antiglycemic medications shortly after surgery

Hypertension: continues to take ramipril 5 mg tablet once daily in the AM

Dyslipidemia: continues to take atorvastatin 20mg tablet once daily HS

Depression: continues to take citalopram 20 mg tablet once daily in the AM

- She crushes all of her tablets and adds them to apple sauce

OTC

Joint Pain: occasional ibuprofen as needed, never tried anything else.

Nutrition: takes a chewable multivitamin, vitamin D 1000 IU drops, calcium carbonate chewable, in the morning and ferrous sulphate (liquid) HS.

Drug Therapy Problems:

1. Patient's GERD requires a medication. The prescribed medication may not be appropriate due to bariatric surgery.
2. Patient's depression requires an increased dose or alternative medication.
3. Patient is at increased risk of bleeds (NSAID, SSRI, and SG) and would benefit from an alternative medication to treat joint pain.
4. Patient is experiencing tiredness and may benefit from additional medications.
5. Patient is taking a medication that is poorly absorbed and may benefit from an alternative medication.

Assessment & Plan:

1. Studies show that SG can lead to GERD,¹⁷ and that PPIs are an effective treatment.^{11,17} Even though rabeprazole is EC, in SG there is no bypass of the small intestine so EC should not be a concern. If swallowing a whole tablet is difficult, several alternatives are available:²⁵

- Open dexlansoprazole, lansoprazole, or omeprazole capsules and sprinkle the contents on cold, soft food.
- Dissolve esomeprazole granules in 15 ml water.
- Disperse esomeprazole delayed release tablet (Nexium® and Mylan brand, not Apotex) in 125 ml non-carbonated water.
- Use lansoprazole oral disintegrating tablet .

2. Citalopram and other SSRIs have been shown to have decreased absorption after bariatric surgery.²⁰ This appears to be a case where the change of absorption was clinically significant. Since citalopram has been effective for so long, increasing the dose to 40mg/day would be a viable option.

3. Suggest taking acetaminophen every 4-6 hours as needed, maximum 4g/day for the management of joint pain. One could also consider a topical NSAID. A referral to physical therapy may be appropriate as well.

4. Tiredness could be due to depression, but also anemia. Recommend a lab requisition for serum levels of vitamins B₁, B₁₂, D, folate, and a complete blood count. Depending on the results, Vitamin

B₁, B₁₂, folate, iron may need to be added or increased. Referral to a dietitian may be appropriate as well.

5. Recommend that calcium carbonate be replaced with calcium citrate (split tablet or chewable) for better absorption.

6. Get updated blood pressure and lipid panel as part of the review to assess current medication therapy, as these comorbidities can continue to improve due to the surgery. Recommend modification to current medication if needed.

7. Recommend to stop crushing pills if smaller than a Smartie™, or split larger tablets.

Conclusion:

A pharmacist's knowledge of pharmacotherapy, pharmacokinetics, physiology, dosage form selection, dose conversion, ability to monitor and interpret lab results, and easy accessibility makes the pharmacist an integral part of the multidisciplinary circle of care with the continuing management of a bariatric patient. With the growing rates of obesity in Canada, bariatric surgery volume will continue to increase, so it is important that pharmacists are familiar and prepared to manage the care of these complex patients.

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