Bariatric surgery — prescribing issues

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After bariatric surgery, the ability of the gastrointestinal tract to absorb food is reduced, therefore its ability to absorb drugs can also be affected. This article summarises the known drug-related issues surrounding bariatric surgery.

Morbid obesity is reaching epidemic proportions and complicating patient treatment in all branches of medicine and surgery. Research on the effectiveness of medicines when prescribed for bariatric patients (those who are due to undergo, or have undergone, surgery to help them lose weight) is limited. The tendency for many clinicians is simply to treat “the thin person inside” — without dose modification or consideration for a patient’s size. Sometimes this is appropriate; sometimes it is not.

Surgery on the gastrointestinal tract to aid weight loss further complicates this picture. In this article, the issues relating to appropriate prescribing for bariatric patients are considered. To do this, the three phases of treatment will be reviewed: preoperative, perioperative and postoperative.

Preoperative prescribing

Obese patients tend to have many comorbidities. For example, it is common for a patient to be receiving treatment for diabetes, hypertension, gastro-oesophageal reflux disease, venous thromboembolism, depression, arthritis and asthma. All of these conditions are caused by, or exacerbated by, the patient’s increased weight.

Pharmacological treatment will have been prescribed for most of these comorbidities, which can lead to problems associated with polypharmacy. In circumstances of multiple comorbidities and polypharmacy, pharmacists must remain vigilant to the problems that can arise.

Monitoring difficulties

Drug monitoring for obese patients can be problematic. For example, obtaining blood samples can be difficult. Also, blood pressure cuffs may not be the correct size to produce an accurate measurement.

Weight loss drugs

The National Institute for Health and Clinical Excellence has published guidance on “the prevention, identification, assessment and management of overweight and obesity in adults and children” (accessible from www.nice.org.uk). According to this guidance, patients should only be considered for bariatric surgery if other treatments have failed — this includes weight-loss drugs. The drugs recommended by NICE for weight loss include:

- Lipase inhibitors (eg, orlistat)
- Centrally acting appetite suppressors (eg, rimonabant and sibutramine)

Orlistat The lipase inhibitor orlistat reduces the absorption of fat (and, consequently, fat-soluble vitamins A, D, E and K) from the GI tract. Patients who fail to adhere strictly to a low-fat diet can suffer severe GI side effects, including oily stools, flatulence, pain, cramps and faecal incontinence. Vitamin deficiencies — particularly vitamin D — can result.

Patients require a good understanding of food composition and good compliance with dietary restriction for orlistat to have maximum effectiveness and minimum side effects. Typically, weight loss is modest, compliance is poor and side effects are common. Furthermore, any weight lost during treatment is often regained when treatment is stopped.

The European Medicines Agency recently recommended for orlistat 60mg (Alli) to be available without prescription. Alli is expected to be available from UK community pharmacies by the end of the year.

Rimonabant Cannabinoid receptor antagonist rimonabant acts in the central nervous system (CNS) to suppress appetite. This drug has had its marketing authorisation suspended throughout the EU following a safety review by the European Medicines Agency. No more patients will be prescribed it, but those currently taking it may continue to do so — the drug was previously licensed for use for up to two years.

Sibutramine Sibutramine exerts its effect by inhibiting the reuptake of noradrenaline and serotonin in the CNS. However, this action is not specific to appetite pathways. Sibutramine often causes, or worsens, hypertension and has various other adverse CNS side effects that often limit its useful-
ness or tolerance. Once again, weight regain is typical when treatment is stopped. Sibutramine is only licensed for use for 12 months.

Other drugs. Pharmacists need to be aware that some patients will also have used, or be using, other drugs to attempt to stimulate weight loss or suppress appetite — and these may not have been disclosed to medical staff. Examples of other drugs used for weight loss include:

- Caffeine
- Nicotine
- Thyroxine
- Cocaine
- Amphetamine and its derivatives

Not all of these drugs will be legally prescribed, so it is important to obtain a comprehensive drug history in a careful and non-judgmental way.

Total weight loss achieved using pharmaceutical treatment is usually modest. Typically, patients remain morbidity obese and at risk of comorbidities such as diabetes and high blood pressure.

Perioperative prescribing

All patients who are to undergo bariatric surgery should be offered a review of their medicines before they are admitted for surgery. During their hospital admission, these patients will invariably endure a period of time when they will be “nil by mouth”. Some oral medicines can be omitted temporarily, while others may need to be given by different routes while the patient is in hospital. Intravenous preparations are a good alternative to administer essential medicines, both before, during and immediately after the operation. Rectal preparations are also an option, but these may be less acceptable for the patient and are more difficult for nursing staff to administer. Oral treatments can be resumed once the patient is able to drink liquids and has started eating a soft diet — often 24 hours after surgery.

Postoperative prescribing

Bariatric surgery alters the anatomy and physiology of the GI tract. To date, little research has been done into how this influences the metabolism and absorption of prescribed drugs, so most of the time, predictions need to made based on the first principles of pharmacokinetics.

VTE prophylaxis. Bariatric patients are at an increased risk of venous thromboembolism, therefore prophylactic medication needs to be prescribed according to the patient's weight. At Northumbria HealthCare NHS Trust, patients are prescribed once daily tinzaparin (50iu/kg). This treatment starts on the evening before surgery and continues until 10 days after the patient is discharged from hospital.

Obstructed transit. Restrictive operations (eg, gastric banding, gastric bypass and sleeve gastrectomy — see p362) reduce the ease with which some drugs enter the stomach — large tablets or capsules in particular can become stuck. Examples include sustained-release formulations of morphine or calcium channel antagonists.

Other drugs may be damaging to the digestive tract if their patterns of dissolution are altered or inhibited. Bisphosphonates cause severe oesophageal reactions, including ulcerations, oesophagitis and strictures. They should be avoided after any restrictive procedure involving the upper GI tract.

Following bariatric surgery of any type, a pharmacist should review the patient's medicines and suggest alternative formulations where appropriate. For example, sublingual, liquid or dispersible alternatives may be suitable, or advice can be provided regarding which tablets can be broken up. Effervescent preparations should not be used because the carbonic acid and bubbles that these formulations release into the stomach can cause problems for bariatric patients after surgery. This is particularly problematic after a gastric banding procedure, which prevents patients from vomiting and burping properly. This can lead to the painful and uncomfortable symptoms associated with gastric bloating.

Lipid-dependent distribution. The lipid and water solubility of regular medicines should also be considered. After bariatric surgery, patients can start to lose weight rapidly, meaning drugs that are highly fat soluble will have an altered volume of distribution and may need dose adjustment. The dose and clinical need for all highly lipid-soluble drugs (eg, metoprolol, propranolol) will need to be reviewed.

Reduced bioavailability. Many bariatric procedures reduce the length of the small bowel, alter bowel pH and reduce the time and area available for drug absorption and enterohepatic recirculation to take place — all of which affect drug bioavailability. This is a particular concern for those drugs with low oral uptake. Pharmacists need to assess the absorption mechanisms of each bariatric patient's medicines to ensure they will continue to achieve therapeutic concentrations.

Drugs with a narrow therapeutic window (eg, ciclosporin, lithium) also exemplify the importance of careful pharmacological review. For these drugs, serious clinical problems can arise from small changes in bioavailability that could be life-threatening. These drugs require intense therapeutic monitoring during the perioperative and postoperative phases.

Also, with the example of ciclosporin, patients cannot simply be switched to an equivalent dose of a liquid formulation, because the different formulations have different bioavailabilities.

After patients have undergone a gastric bypass or sleeve gastrectomy, the pH conditions of their GI tract will have changed. This can lead to problems if the absorption of a drug is pH-dependent. For example, different calcium salts are absorbed at different pH levels.

Ulc er prophylaxis. Some bariatric procedures exclude parts of the stomach but do not remove them. Patients who have undergone these procedures will no longer be able to undergo diagnostic endoscopy. Therefore, it is recommended that these patients are prescribed prophylactic treatment to prevent stomach ulceration (eg, proton pump inhibitors) and that long-term treatment with non-steroidal anti-inflammatory drugs is avoided. They may also need to be tested, and treated, if necessary, for Helicobacter pylori infection.

When the ileum is anastomosed to the stomach, antacids are routinely recommended. This is because the ileum is less resistant to acid than the duodenum, which contains neutralising bicarbonates.

Malabsorption. Supplements may be needed to counter the dangerous effects of malabsorption. This includes multivitamins and minerals. Iron absorption is pH-dependent, so co-prescribing iron supplements with vitamin C can help iron uptake. Any bariatric surgery patients become vitamin B12 deficient due to malabsorption, even if the stomach is not removed during the operation, therefore B12 injections may be required.

Stopping treatments. Following surgery, some comorbidities improve immediately, allowing some regular treatment to be stopped. Diabetes is often one of the first conditions to improve — many patients who were previously dependent on insulin or oral hypoglycaemics can have their treatment stopped or reduced. Other conditions need to be monitored over longer periods to ensure necessary treatment adjustments are made later. For example, hypertension may resolve over weeks, months or not at all.

Discussion opportunities

Patients are usually informed by a pre-assessment nurse, a pharmacist and their surgeon about the drug changes that need, or are able, to take place after surgery and how those changes can be maintained in the future. It is important for pharmacists to offer every patient the opportunity to discuss changes in his or her drug regimen.
allows the patient to ask questions and to discuss any issues that they may have regarding treatment compliance and acceptance, which increases the likelihood of the patient adhering with prescribed treatment.

Pharmacists’ role in a bariatric team

In any healthcare service, it is important to recognise the value of different professionals to improve patient care and give a better understanding of the implications of different treatment options. This can be done by making decisions as part of a multidisciplinary team. At Northumbria Healthcare NHS Trust, different professionals discuss the management decisions about patients undergoing bariatric surgery to find the best possible solution for each patient.

The team consists of bariatric surgeons, specialist nurses, dietitians, an anaesthetist, ward staff nurses, a psychologist, and a pharmacist. The contribution of other professionals is sought whenever necessary.

Once a month, a team meeting takes place, in which several patients are discussed to determine whether they are suitable for surgery, or whether other methods for losing weight are more appropriate. Patients’ social history and medication will be included in this discussion.

Pharmacist input

After being invited to join the bariatric team meetings, the pharmacist was asked to produce a reference guide for junior doctors containing information about the availability of alternative formulations of commonly prescribed drugs (e.g., dispersible or parenteral formulations). She was also asked to play an active role in ensuring all bariatric patients received adequate prophylaxis for venous thromboembolism.

As well as ensuring that regular and postoperative treatments are prescribed correctly, the pharmacist also identifies any potential problems regarding changes in pharmacokinetics of the patient’s regular medicines, and recommends other formulations or routes of administration for regular medicines where necessary.

The ultimate aim of the role is to ensure that every patient receives optimal pharmaceutical care. Standardisation of prescribing and the production of written guidance has been of great importance and helps to maintain governance.

Lindes Callejas-Díaz, specialist pharmacist for general surgery at Northumbria Healthcare NHS Foundation Trust, describes her involvement with the team: “Once I started attending the team meetings on a regular basis, I gained more experience and, with every new patient, became more involved in their pharmacological management. I also had to familiarise myself with the different procedures that are performed in the trust, as well as the local and national guidelines for obesity and surgery.

“It is useful to know and be introduced to other professionals, who have helped me gain a better understanding of their roles and the importance of all the factors that affect bariatric patients before, during and after surgery.

“The surgical preassessment nurse now contacts me regarding each new bariatric patient to inform me about the patients’ regular medicines. This was not routinely done before I became involved with the meetings.

“Bariatric surgery is evolving rapidly in the UK and there is much scope for the development of more pharmacist roles associated with this specialty. Prescribing for bariatric patients in general medicine also lacks an evidence base, providing the opportunity for meaningful research and audit. Taking on the role of the bariatric service pharmacist has been of great value in personal and professional development.”