



Follow-Up After Bariatric Surgery for Health Professionals

The following advice is intended for general practitioners, practice nurses, and other health professionals who might be caring for patients who have previously undergone bariatric surgery. It is intended for use with patients who have undergone either laparoscopic Roux-en-Y gastric bypass (LRYGB) or laparoscopic sleeve gastrectomy (LSG) surgery, who are at least one year out from their surgery, and who have completed the standard follow-up of their bariatric surgery program. This advice may not be suitable for patients who have undergone different bariatric operations, or in every circumstance. Additionally while every effort is made to keep current follow-up recommendations available at www.aspiringbariatrics.co.nz, guidelines do change. If you have any questions, please don't hesitate to contact me via one of the methods above.

In general, people who are a year or more out from bariatric surgery should be relatively stable from a nutritional and vitamin perspective. Regular vitamin supplementation and nutritional monitoring is necessary however to prevent and micronutrient deficiency. These guidelines are based on those published by the American Society of Metabolic and Bariatric Surgery and the British Obesity and Metabolic Surgery Society, and adapted for patients who have had surgery either in the public or private sector in Otago or Southland.

Operations

Laparoscopic Roux-en-Y gastric bypass and Laparoscopic sleeve gastrectomy are the two most common weight loss operations in modern bariatric surgery.



Fig 1a – Laparoscopic Roux-en-Y gastric bypass



Fig 1b – Laparoscopic sleeve gastrectomy

Vitamins

All patients who have undergone bariatric surgery require life long vitamin supplementation with a multivitamin and calcium. There are a wide range of multivitamins available in New Zealand and unfortunately most are not sufficient for patients post bariatric surgery. Our current recommendations are either **Celebrate bariatric multivitamin** at a dose of **one chewable/capsule daily** available through amsnutrition.co.nz or **Centrum Advance multivitamin** at a dose of **two tablets daily** (this is available from most supermarkets and pharmacies). The difference between these is that Centrum Advance does not have enough vitamin B12 for most patients following LRYGB. Please note that the subsidised multivitamin available on prescription is not suitable for patients after bariatric surgery.

All patients also require **calcium carbonate** at a dose of 500mg of elemental calcium twice daily. This can be given on prescription. Please advise your patients to take these at least 2 hours apart from any iron supplements.

Vitamin B12 is required for patients who have had LRYGB and who are not taking Celebrate bariatric multivitamin. It is also required in other patients with low vitamin B12 on testing. It can be given as an intramuscular injection of 1mg every 3 months, or alternatively patients can take 1000mcg B12 sublingual oral drops once daily (available from amsnutrition.co.nz).

Iron is not given routinely, but will be required by most menstruating women. Iron should be given to any patient with low or falling ferritin on testing. The usual maintenance dose is

Ferro-tab (Ferrous Sulphate 200mg/65mg elemental) once daily and can be given on prescription. For low iron stores, **Ferro-grad** (Ferrous Sulphate 325mg/105mg elemental) once daily contains more iron and can be given on prescription. If patients experience constipation we recommend the **self-funded Ferro-grad C** (Ferrous Sulphate 325mg/105mg elemental containing 500mg Vitamin C). If iron stores cannot be maintained despite supplementation then causes of blood loss should be investigated (GI, menstruation) and the patient should be referred for parenteral iron infusion.

Vitamin D should be given if testing reveals a deficiency. The recommend regimen is 50 000 units once weekly for 12 weeks, and then once per month for maintenance. In the south, vitamin D deficiency is common during the winter months.

Blood Testing

Patients who are a year or more out from bariatric surgery should only need laboratory blood testing once per year if they are nutritionally stable. Blood tests should be done more frequently for those with symptoms suggestive of a vitamin deficiency, pregnancy, or following supplementation of a deficiency.

Recommend blood tests are full blood count, electrolytes, creatinine, liver function tests, parathyroid hormone, thyroid stimulating hormone, ferritin, vitamin B12, folate, 25 OH vitamin D, lipids and glycated haemoglobin.

Copper, selenium and zinc should also be measured if there are unexplained anaemias, neurological symptoms, taste changes, hair loss or poor wound healing.

Pregnancy

Risks of most pregnancy complications are reduced following bariatric surgery. Bariatric surgery does represent a risk for low birth weight babies however and there are small risks of fetal malformations related to vitamin deficiencies (e.g. folate deficiency, vitamin A toxicity). Furthermore it can be difficult for bariatric patients who are pregnant to meet their increased nutritional needs and appropriate weight gain throughout pregnancy needs to be addressed. For this reason all women should be referred to a bariatric surgeon AND bariatric dietitian prior to conception, and should have their pregnancy managed in conjunction with a high risk obstetrician.

If this is not possible, recommended daily vitamin intake should be **1 celebrate chewable OR 2 centrum advance multivitamin**. In addition to this **folate 0.8mg + iodine 150mcg** is necessary to increase the folate supplementation without exceeding vitamin A daily dose limits. Alternatively, Elevit with iodine supplement can be given instead of the folate and iodine supplements, in addition to the multivitamin.

Other Issues

Rapid weight loss is a risk factor for the development of **gallstones**. Suspicious symptoms should be investigated by ultrasound, and surgical referral indicated if diagnosed. Cholecystectomy should ideally be performed by a bariatric surgeon who can check the anatomy of the bariatric procedure at the time of cholecystectomy.

Bowel obstruction can occur after LRYGB, caused by internal hernia, adhesions or intussusception. Because of the surgical rearrangements, this may have very atypical symptoms such as left upper post-prandial abdominal pain. It will also not show up on plain abdominal radiology. **It is important that any unexplained abdominal pain is investigated by a bariatric surgeon.**

Anastomotic ulcer can occur late after gastric bypass and present as GI bleeding, dysphagia or perforation. These are more common in smokers and those taking NSAID's. This should be investigated by endoscopy, preferably by a surgeon familiar with bariatric surgery.

Counselling regarding **smoking cessation**, and **avoidance of NSAID's** is important to prevent anastomotic ulcers, which can occur at any point after surgery.

Thiamine deficiency should be considered in any patient with intractable vomiting or poor oral intake. Urgent referral for IV thiamine replacement should be made in these circumstances.

Gastro-oesophageal reflux symptoms are common after LSG. These can usually be managed with OTC medications or proton pump inhibitors. Persistent or severe symptoms should be investigated by a bariatric surgeon.

Excessive weight loss or significant weight regain can have surgical causes. Please re-refer to a bariatric surgeon for further investigation.

Vomiting after meals is often the result of overeating or eating too fast, however can have a surgical cause. Please consider referral to a bariatric surgeon or dietitian.

Excess skin is common after significant weight loss. Patients should delay any body contouring surgery until their weight is stable, preferably two years after their bariatric surgery. After this time, referral to a plastic and reconstructive surgeon should be considered.

Who to Refer

Please consider referral to a specialist bariatric surgeon in the following circumstances:

- Unexplained abdominal pain
- Excessive weight loss
- Significant weight regain
- Significant or difficult to treat vitamin deficiencies
- Intractable reflux symptoms
- Pregnancy or pre-pregnancy planning
- Symptomatic gallstones
- Unexplained anaemia or neurological symptoms.
- Any other concerns

We also recommend a referral to a bariatric Dietitian in the following circumstances:

- Significant weight regain
- Pregnancy or pre-pregnancy planning
- Fatigue
- Increased energy requirements eg nutrition for increased activity/bariatric-specific sports nutrition

If you have any other questions about these guidelines or management of patients after bariatric surgery please contact me via one of the above methods.

Yours sincerely,

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