Centre for Obesity Management and Surgery (COMS)

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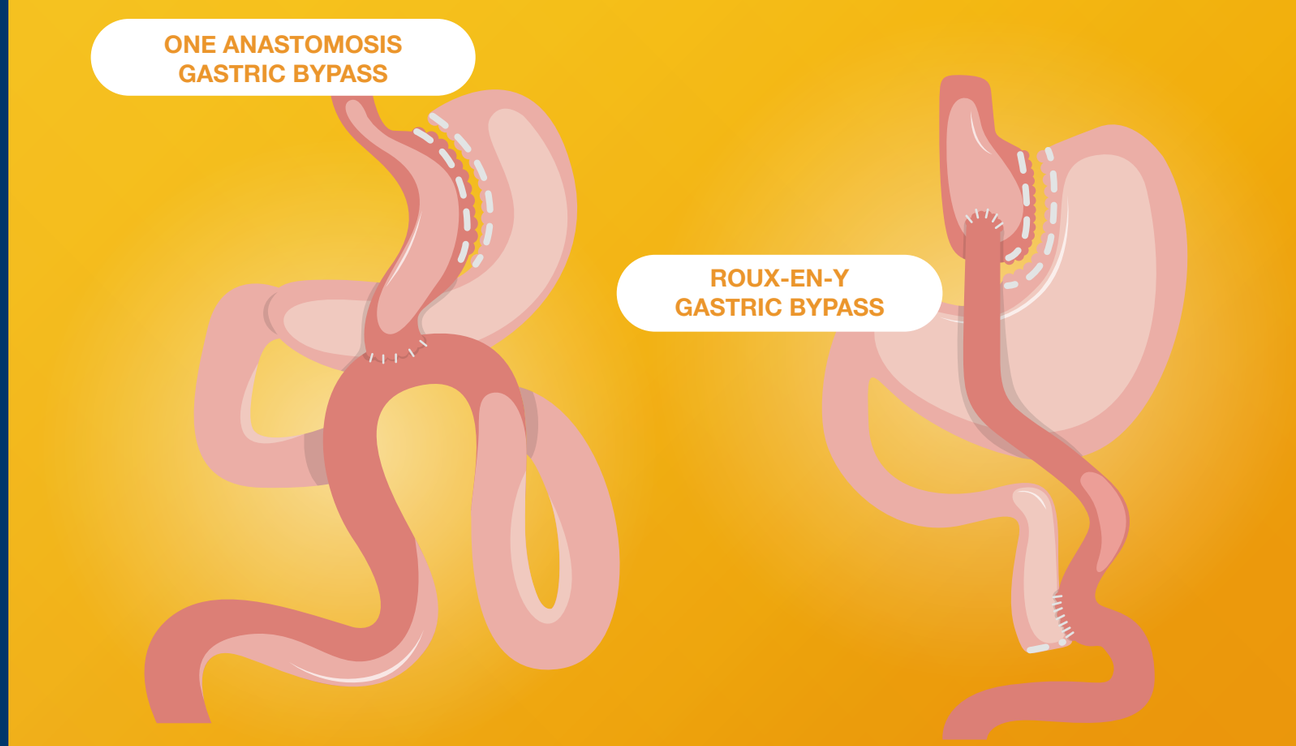
National University Hospital

Patient Information Sheet
for Laparoscopic Gastric Bypass



You are contemplating undergoing a laparoscopic gastric bypass procedure (Roux-En-Y or One Anastomosis gastric bypass). This information sheet provides you with the necessary information to make a decision. The information given here is not exhaustive, and other practitioners may adopt a different course of action. Please read this information sheet carefully, and feel free to approach us for clarifications.

Introduction

Obesity has become more common, and with it, a sharp rise in associated medical illnesses such as heart disease, hypercholesterolaemia and diabetes. These illnesses are associated with a significant decrease in quality of life, life expectancy and worsening of obesity-associated comorbid conditions. Metabolic surgery results in sustained weight loss, and improves associated metabolic diseases like hypertension, Type 2 diabetes, raised lipids, sleep apnea and fertility issues. Weight loss also results in offloading the body joints, thus improving mechanical issues such as knee pains, backaches and overall well-being.

Non-Surgical Alternative

Apart from rare instances, there is ample evidence that lifestyle modifications (diet/exercise) and medically supervised weight loss with medications or endoscopic methods do not result in sustained weight loss in the long term. Bariatric surgery is an effective long-term solution to achieve significant and sustained weight loss for patients with morbid obesity. It also lowers the risk of death and increases life expectancy.

Laparoscopic Gastric Bypass

The laparoscopic (keyhole) gastric bypass is a well-described procedure for weight loss. Patients undergoing laparoscopic gastric bypass lose an average of 60-70% of their excess body weight. Obese diabetic patients may see a decrease in medication doses, and some may not require medications in time to come. However, long-term follow-up for monitoring metabolic disease resurgence is strongly recommended.

Who is suitable for gastric bypass surgery?

- Body Mass Index of 32.5 kg/m^2 with obesity related illnesses
- Body Mass Index of 37.5 kg/m^2 and above
- Unsuccessful supervised medical weight loss
- Committed and motivated patient. Free of psychiatric illnesses or stable on medications

How does it work?

Bypass surgery results in portion control by reducing hunger and inducing early fullness, allowing a committed patient to eat three small meals daily. It reduces the effective length of intestines available for nutrient absorption so that less of the nutrients are absorbed by the body.

Alternative procedures

There are several options available for weight loss surgery, including biliopancreatic diversion, duodenal switch and laparoscopic sleeve gastrectomy. Consult your doctor if you wish to know more about other interventions.

Advantages of Laparoscopic Surgery

- Less post-operative pain
- Early recovery
- Shorter hospital stay
- Smaller wound scars
- Fewer wound-related complications

What You Need to Know

Advantages of bypass surgery

Long-term data shows that gastric bypass surgery is safe.

Sustained excess weight loss up to 60 - 70% at 5 years post-surgery.

Significant improvement in obesity-associated comorbidities. 60-90% of patients with diabetes will experience improved outcomes.

Disadvantages of bypass surgery

Requires strict adherence to lifestyle/diet advice, to prevent weight regain.

While the procedure can technically be reversed, doing so will result in weight gain.

More extensive surgery involving re-routing of intestines.

Before a Laparoscopic Gastric Bypass

1. Your surgeon will explain the procedure, risks, benefits, alternatives and complications as well as expected outcomes.
2. Your dietitian will educate you on the diet before surgery and you will be advised to lose some weight. You will also be educated on how diet progression will happen post-surgery and what maintenance diet entails.
3. Your physiotherapist will advise you on the exercises that are tailored to your needs.
4. Appointments to assess your fitness prior to surgery will be scheduled for you. These may include:

Blood investigation

Ultrasound

Gastroscopy to check the insides of your stomach

Optimising your medication condition before surgery

Advice on general anaesthesia and its risks from your anaesthetist

Other investigations that may be clinically indicated

5. You will undergo financial counselling to find out more about the total cost of the procedure, date and time of admission, pre-surgery preparation and reporting location.

6. You are advised to quit smoking. Smoking increases the risks associated with the surgery and may delay your recovery post-surgery. In the long term, smoking is associated with a higher risk of developing ulcers at the anastomosis (the surgical connection between two structures) and this can result in bleeding, pain or even perforation at the ulcer site.

7. You should fast from midnight before your surgery or as advised. Kindly follow the instructions given by your anaesthetist/surgeon regarding medications.

During a Laparoscopic Gastric Bypass

The laparoscopic gastric bypass procedure is performed by making small incisions in the abdominal wall through which keyhole instruments are inserted. The Roux-En-Y Gastric Bypass (RYGB) and the Laparoscopic One Anastomosis Gastric Bypass (OAGB) are the most commonly performed procedures.

Roux-En-Y Gastric Bypass (RYGB)

In an RYGB surgery (Figure 1 below), the stomach is stapled and separated to create a stomach pouch that holds 20-30ml of food. Food in the small pouch leads to early satiety. An anastomosis (connection) will then be made between the stomach pouch and the small intestine to establish continuity between the stomach pouch and the intestine (Alimentary Limb). Another connection between the small intestines will be created for the continuity of the gastrointestinal tract. As a result of the above configuration, about 50-100 cm of small intestines and the remaining stomach are being bypassed and thus will not actively take part in the absorption of nutrients.

One Anastomosis Gastric Bypass (OAGB)

In an OAGB surgery, a long narrow gastric pouch is created (Figure 2 below). An anastomosis (connection) is then made between the stomach pouch and a loop of the small intestine to facilitate food passage into the intestine. 150-200 cm of small intestines are typically being bypassed in the OAGB surgery.

Following either surgery, your appetite will improve with time, but you will feel less hungry in the long run.

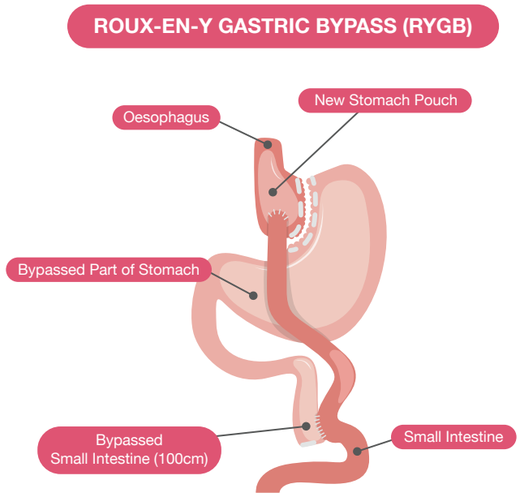


Figure 1

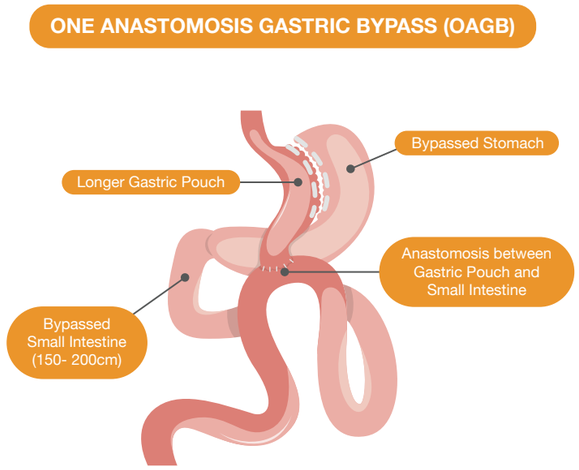


Figure 2

After a Laparoscopic Gastric Bypass

Post-surgery recovery

Post-surgery, you may be transferred to the general or high-dependency ward, depending on your need for monitoring. You will be placed on intravenous fluids and may be allowed to consume clear liquids in the evening, on the day of your surgery.

As advised by your dietitian, you will be started on a liquid diet the day after your surgery. You will be given painkillers, gastric acid-reducing medications and vitamin supplements. You will be asked to do breathing exercises and encouraged to walk to decrease the risk of blood clotting in your legs. Barring other reasons (if there are no further complications), you can be discharged once your oral intake is close to one litre of fluid.

Upon discharge, please adhere to the following:

1. Exercise – As advised during the pre-surgery counselling session.
2. Diet progression is staged. Most patients will be placed on 2 weeks of liquid diet, followed by 2 weeks of blended diet then 2 weeks of soft diet.
3. Your doctor will inform you of which medications you should continue taking, and those that you should stop. Please clarify with your doctor if you are unsure.
4. An appointment will be scheduled for your review in the weight management clinic. Attending follow-up sessions regularly will help in achieving better outcomes.
5. Instructions on wound care and when to call for help will be detailed later in this booklet. We are also ready to provide any other advice and support that you may require after surgery.

Risks and Complications

The surgical team will do all we can to minimise your risks. Most patients do not experience complications after gastric bypass surgery although complications may occur in rare cases.

Patients are encouraged to consider all benefits and risks before coming to a decision.

Complications can be grouped into general complications associated with any abdominal surgery, those specific to gastric bypass and those that can happen after a bariatric weight loss surgery. Apart from the psychological stress of a complication, it results in higher overall treatment costs.

General Complications for Any Abdominal Surgery

The pointers below will help you better understand some of these complications and how to manage them.

Medical risks

General medical risks apply to all abdominal surgeries. Therefore, it is important to optimise your medical risk factors (e.g. diabetes, high blood pressure) before the surgery.

Systemic infection	The most commonly witnessed are wound, urinary and chest infections. Serious infections such as blood infections, collection of pus or spread of infection in the abdomen are rare. In cases of an abdominal infection, surgical, radiological or endoscopic drainage may be required. However, some of these infections can progress to death, even if the source of infection is identified and appropriately treated. The risk of a wound infection is below 2%. After 3 days, the wound can be left uncovered. However, if the wound becomes infected, then it will need to be dressed regularly. These wounds will heal over time. Smoking increases the risk of wound infection.
Venous thrombosis	The risk after bariatric surgery is less than 1%. Blood clots can form in the veins of the legs or pelvis (Deep Vein Thrombosis) and can migrate to the lung (pulmonary embolism). While this is a serious complication and can be fatal, we will take measures to minimise the risk. You will be given stockings to compress your legs. When in the operating theatre, machines will assist to pump the blood from your legs back to the heart. These machines will continue to be used in the ward. You will be encouraged to walk as soon as possible. If you are identified as being a high-risk candidate, the surgeons may thin the blood with the help of injections, to minimise risk. You will be advised to stop any oral contraceptive pills or hormonal treatment prior to surgery if you are on these medications.
Respiratory complications	Lung complications such as atelectasis (partial collapse of the base of the lungs), pneumonia and aspiration can occur. The risk of these complications can be reduced by quitting smoking, preoperative weight loss, early mobilisation after surgery and working with physiotherapists on breathing exercises.
Incisional hernias	This is more common with open surgery; they are rare after laparoscopic bariatric surgery. The risk is approximately 1% and surgical repair may be required.
Injury to surrounding structures	It is very rare to injure the other organs during laparoscopic surgery, and the occurrence rate is less than 1%. Organs that can be injured include the spleen, liver, bowel and blood vessels. In very rare cases, bowel injury may not be recognised at the time of primary surgery, leading to a risk of developing life-threatening intraabdominal infection (peritonitis), requiring further surgeries and probable admission to intensive care.
Wound scars	Every wound leaves behind a scar. Fading of scars is dependent on numerous factors, of which many are not modifiable. While every surgeon tries to give his patient the best non-visible scar, different healing properties of individuals can result in obvious scarring or a scar that outgrows into the neighbouring skin. Specialist care may be sought to assist with the management of complex scars.
Death	The risk of death within 30 days after undergoing bariatric surgery has been quoted to be 0.3% or 3 in 1,000 patients. The majority of deaths occur as a result of heart attack, blood clot going to the lungs (pulmonary embolism) and infection as a result of surgical complications.

Risks Specific to Laparoscopic Gastric Bypasses

Anastomotic / stapler line leak

A bowel anastomosis is a connection between two loops of intestines. If this anastomotic line breaks down and leaks, there is a risk of peritonitis (widespread infection in the belly). The risk of a leak is less than 1.3% but should it occur, the patient may require further surgery/interventions. The length of hospital stay will be prolonged and it is likely for patients to spend some time in the intensive care unit. If the infection is not controlled, it can become life-threatening.

Anastomotic / stapler line bleed

Patients are at less than 4% risk of significant bleeding. Should this happen, it is usually managed without the need for further surgery. A blood transfusion may be needed in selected cases. In cases of severe bleeding, further surgery, endoscopy or radiological interventions may be undertaken to secure the bleeding point.

Stricture formation

Even though the anastomosis between the stomach and small intestine in Roux-En-Y is intentionally made smaller to induce early fullness, there is a less than 1% risk that the anastomosis may be very narrow, preventing food from going down. Should this happen, you may need to undergo endoscopic dilatation or surgery to widen the passage.

Marginal ulceration

Infrequently, ulcers can develop around the connection between the stomach and the small intestine. The likelihood of developing such an ulcer is between 0.6-15%. Patients can present with abdominal pain, nausea, vomiting, bleeding or perforation mostly commonly within the first few months after surgery. Occasionally, it can also present years after surgery. Depending on the severity of the ulcer, ulceration can be treated with medications but may require endoscopy or surgery if bleeding or perforation occurs. Smoking and prolonged usage of certain painkillers including aspirin or steroids may increase the risk of developing a marginal ulcer. To reduce the likelihood of marginal ulcer formation, patients will be given medications for the first few months after surgery.

Internal hernia

In the RYGB surgery, internal defects are created as part of the intestinal rearrangement. 2-10 % of patients may suffer small bowel blockage if the intestines become trapped in these defects. When such a complication occurs, surgical correction and occasionally intestine resection may be required. Your surgeon will routinely repair internal defects during the time of initial surgery. However, an internal herniation may still occur, sometimes years after the primary surgery.

Side Effects

Nutritional deficiencies

As the laparoscopic gastric bypass involves excluding a portion of a normal gut, new nutritional deficiencies may occur after the procedure, or any existing deficiencies may worsen.

We strongly recommend that patients adhere to post-surgery follow-up and supplement intake in order to prevent long-term nutritional deficiencies. You will undergo half-yearly or yearly blood tests to monitor for any nutritional deficiencies. Multi-vitamins, iron and vitamin D supplements are always prescribed, and lifelong compliance is necessary.

Common deficiencies include iron, vitamin B12, vitamin D and protein deficiency. Patients with protein deficiency may experience hair loss and body swelling. Patients with vitamin D deficiency may develop brittle bones and osteoporosis, thus increasing the risk of fractures. Mouth ulcers can form as a result of vitamin B12 deficiency as well as paralysis in severe cases. Low blood count (anaemia) can occur as a result of vitamin B12 or iron deficiency.

Malaise/Fatigue (Dumping Syndrome)

You may feel light-headed occasionally. This may be due to a reduced amount of water intake. When this occurs, do not panic. Find a place to sit or lie down. Your body will adjust and the blood will be redistributed adequately after a short interval. Aim to drink 1.5l of fluid per day and monitor your intake. When getting up from a sitting or lying position, you should also do this slowly to reduce the likelihood of feeling faint.

Surgical alteration of the stomach and bowels may result in rapid movement of food into the intestines and this may result in a mixture of symptoms such as nausea, abdominal pain and dizziness. After surgery, to reduce the likelihood of these symptoms, you are encouraged to have a balanced diet and chew your food slowly and thoroughly. Drinking fluids before or during a meal should also be avoided. Complex carbohydrates such as whole grains, beans and vegetables are also preferred over simple sugars such as fruit juice concentrates.

Altered bowel habits
Bowel habits may be altered after the surgery. In the beginning, you may have watery bowel movements. Your bowel movements will become regular once you start to take solid meals. For most patients, bowel habits should become regular. You should have one bowel movement every day (usually in a reduced quantity than before), although some patients may experience 2 - 3 movements a day. Changes in diet and supplement intake will make your stools change form, colour and odour. Ask for laxatives if you get constipated easily.

Flatulence
Passage of more wind and stools that are more foul smelling is a common experience after bypass surgeries. After bypass surgeries, you will have a shortened bowel, which can result in more odorous gas or more forceful expulsion of gas from the body. This will happen particularly when you consume a diet that is high in carbohydrates, while foods high in fat and protein cause very negligible flatulence.

You are advised to:

- Eat meals slowly and chew food thoroughly
- If you are lactose intolerant, avoid drinking milk (yoghurt is acceptable)
- Avoid sugary food
- Avoid gassy drinks and drinking with a straw

Vomiting
It is important to remember that your new stomach's volume is approximately 30ml and can be easily overwhelmed. Patients must eat slowly and stop at the first sensation of being full. Vomiting can occur as a result of eating too quickly, poor chewing and inappropriate food that is not recommended by your dietitian. If the vomiting persists, please contact your doctor.

Hiatus hernia and reflux
A hiatus hernia occurs when part of the stomach slips up through the diaphragm into the chest. It is common in obese patients. Generally, the symptoms of reflux improve with weight loss. However, it may worsen in some patients. Please inform your surgeon if you experience symptoms of acid reflux so that your bariatric surgery can be tailored to your symptoms. It is diagnosed at the time of upper gastrointestinal endoscopy. At the time of your gastric bypass surgery, your hiatus hernia may also be repaired. We recommend surveillance follow-up endoscopy for patients who have had a laparoscopic OAGB or sleeve gastrectomy.

Hair loss
It is not uncommon to have some temporary thinning or loss of hair in the first few months after bariatric surgery. This is mainly related to significant weight loss and thus can happen even with lifestyle-induced weight loss. Hair loss occurs due to common nutritional deficiencies such as protein and iron deficiencies. It is important that you consume a balanced diet, accompanied with supplements to minimise this side effect. Once your weight loss stabilises, your hair will likely regrow.

Redundant skin folds
With weight loss (be it medically or surgically induced), some patients may experience looser skin folds. It is determined by age, exercise, speed of weight loss, and elasticity of the skin. Upon weight stabilisation in appropriate individuals, abdominoplasty (removal of excess fat from the abdomen) is an option.

Failure to lose weight or weight regain
Some patients may fail to lose weight or experience weight regain. The most common causes include failure to adhere to dietary advice and regular exercise, though a portion of long-term weight regain may be physiological. Revision operations may be advised for selected groups of patients.

Home Care Advice

Wound Care
- Your wound will be covered with a waterproof dressing. It is safe to shower over it. However, if the wound becomes wet within 72 hours of surgery, the dressing will need to be changed.
- You can remove the dressing 3-4 days after surgery and shower over it. Keep the wound site clean and dry.
- It is normal for the wound to have slight bruising that changes colour with time and be slightly numb at the incision site. The changes will resolve after a few months.
- Seek medical help if the wound site has discharge, redness, increased pain or bleeding.

Medication
- Take medications as prescribed by your doctor.
- Seek medical help if the pain cannot be controlled with medication.
- In most diabetic patients, the diabetic medications are discontinued or the dosage is reduced after surgery.

Dietary Advice
- Follow the dietary instructions strictly, as advised by your dietitian.
- Drink adequate amounts of fluid as advised, to prevent dehydration.
- It is normal to experience watery stools for the first few weeks after surgery.
- If you have not emptied your bowels for 3 days or more, ensure you take adequate amounts of water and if it persists, seek medical help.

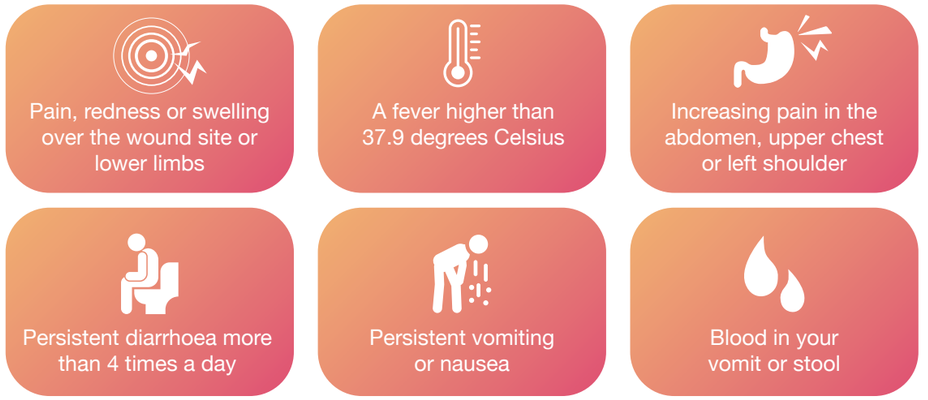
Activities
- Simple laxatives like lactulose are helpful with bowel movements.
- Continue doing breathing exercises at home for the first week after surgery.
- Ambulate and exercise daily as instructed by your physiotherapist.
- You may return to work 2 - 4 weeks after surgery, with no activity restrictions. It will typically take 5 - 6 weeks for your pre-surgery energy levels to return.
- Avoid lifting heavy weights beyond 10kg for 6 weeks.
- Wait 2 - 4 weeks before having an intimate relationship.
- You may experience some mood changes/emotional instability after surgery. This is normal and it will get better over time.
- Rapid weight loss is associated with increased fertility, which increases your chances of becoming pregnant. You are advised to use 2 forms of contraception.
- You are advised against getting pregnant for the first 18 months after surgery.
- Do not plan long-distance travelling for 6 weeks after surgery.
- You can go back to work within 10 days after surgery, depending on the physical demand of your job.

Type of Activities Suitable After a Laparoscopic Gastric Bypass

Days 1-2	Days 3-5	Days 6-30	After 1 month	After 2 months

Disclaimer: As advised by your physiotherapist

When Should You Seek Medical Help?



During office hours:

To be directed to your surgeon at **National University Hospital**, **Ng Teng Fong General Hospital** or **Alexandra Hospital** - Call 6908 2222

After office hours:

Visit the Emergency Medicine Department (A&E) of the hospital where you had undergone the surgery.

For other enquiries, please email us at contactus@nuhs.edu.sg

Conversion to Open Surgery or Change in Procedure Type

Although all surgeons strive to complete the procedure laparoscopically, it may be necessary to convert to an open surgery for safety reasons. Should this happen, patients will have a prolonged stay in the hospital and have an increased risk of complications such as wound infection and incisional hernias. Converting to open surgery is not a complication but rather, a safe surgical judgment and is based on patient safety.

In severely obese patients or patients with severe fatty liver disease, gastric bypass may be performed in two stages. Your surgeon may decide during the first surgery after an assessment that it is not feasible or safe to perform a gastric bypass surgery. In these cases, a laparoscopic sleeve gastrectomy will be performed. You will be followed up after the surgery to monitor for weight loss and control of associated medical illnesses to decide if you will require the second-stage bypass surgery.

		Pre-surgery	6 months	12 months	18 months	24 months	Yearly
Patient Assessment	Height, Weight, Vital Signs and Waist Circumference						
	Body Composition Analysis						
Appointments/ Teleconsultation	Surgeon						
	Dietitian						
	Physiotherapist						
Blood Tests							
Others	Questionnaires						

Patient's Declaration

1. I have read and understood the information in the Laparoscopic Gastric Bypass Patient Information Sheet.
2. I acknowledge that the potential risks of undergoing the procedure have been fully explained to me.
3. I give my consent to undergo the procedure.

Patient's Name (Print Name): .....

NRIC No. / Passport No.: .....

Patient's Signature and Date (dd/mm/yyyy)

.....

Doctor's Declaration

1. I declare that I have explained the nature and consequences of the procedure to be performed, and discussed the risks that particularly concern the patient.
2. I have given the patient an opportunity to ask questions and I have answered them.

Doctor's Name (Print Name): .....

MCR No.: .....

Doctor's Signature and Date (dd/mm/yyyy)

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