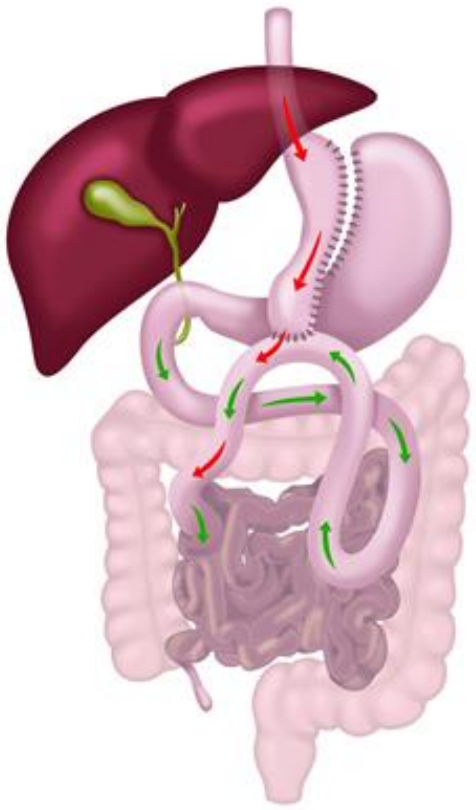
Omega Gastric Bypass (mini gastric bypass)



The **Omega Gastric Bypass (OGB)** or **Mini Gastric Bypass** or **One Anastomosis Gastric Bypass** is another surgical technique for treating **morbid obesity with the co-morbidities**.

This procedure is already described in 2001 by Dr. Rutledge but became only more and more performed since 2010. In 2017 it is after the sleeve and the standard gastric bypass the 3rd bariatric procedure in the world.

Just like the standard gastric bypass, also called Roux-en-Y Gastric Bypass, it is a **combined technique** with some restriction, but more malabsorption.

The advantage of this procedure compared to the standard gastric bypass: this procedure is shorter (only 1 anastomosis) and so safer. Following the advocates of the procedure, the OGB should be more sustainable, effective and easier to reverse. Especially the effect on diabetes type 2 is outstanding.

One of the disadvantages of this procedure is the reflux of bile in the oesophagus: the risk is less than 2 % and treatable with medication or an easy operation.

The technique

Nearly all procedures are performed by a laparoscopic operation or **keyhole surgery**. Via small incisions of 0.5 to 1 cm, the surgeon inserts 5 to 7 *trocars* (operating canals).

A small stomach pouch of 10 till 15 cm length is separated from the stomach and sealed with staples. With this technique the stomach and the small intestine are left in place!

The small intestine is not divided and is linked to the gastric pouch at 150 till 200 cm from the point at which it starts. The surgeon may decide to alter the length of the intestine segment.

As a result the stomach and duodenum are bypassed, so that food no longer passes through the stomach

How the omega gastric bypass works

The omega gastric bypass works through reduced food intake (restriction) and even more through malabsorption (diminished digestion). This is achieved in several ways.

1. Quick feeling of fullness: the small stomach pouch causes an early feeling of fullness, which inhibits the intake of food.
2. Reduced feeling of hunger: the feeling of hunger reduces strongly. This can be explained by the fact that the stomach pouch is separated from the stomach, as a result of which less of the hunger hormone (Ghrelin) is produced.
3. Dumping syndrome: this is an uncomfortable feeling, which is stimulated by the food in the small stomach pouch going directly to the small intestine. This feeling is mostly caused by eating sugars and by eating too quickly. Dumping stops a lot of patients from eating sweets. This dumping syndrome differs from patient to patient and decreases mostly over time.
4. Malabsorption: the food is going from the small pouch directly in a lower part of the small intestine. This is also the reason of the very good effect on diabetes type 2.

Results

Weight

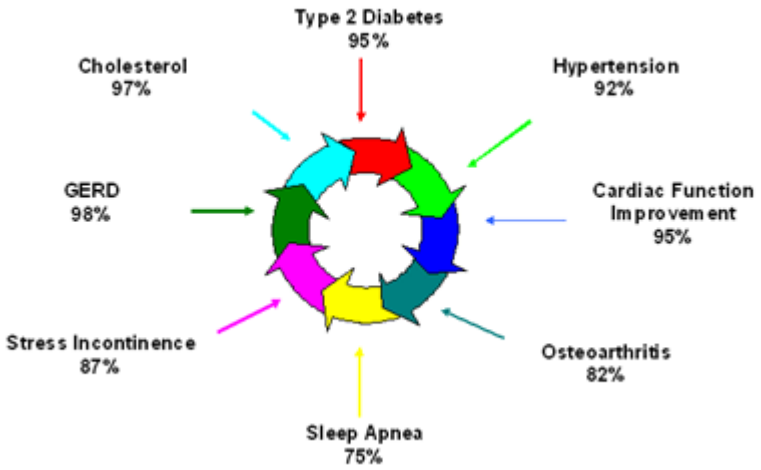
Studies of large groups of patients have shown that one year after surgery, patients lose 75% of their excess weight on average. In the case of a patient who is 50 kg overweight, this implies a weight loss of 38 kg after 1 year.

After 5 years, there is still an average loss of 70% of the excess weight. This is largely to do with the fact that the eating habits of the patients can differ a lot from one individual to another.

Other positive effects

More than 90% of co-morbidities (disorders resulting from obesity) disappear or improve thanks to this operation, such as high blood pressure, type II diabetes, back pain, sleep apnoea, depression, and so on. Especially the effect on diabetes type 2 is very good with remission of the diabetes in more than 90 % if the diabetes exists since less than 10 years. Most these patients can stop all their medication, even insulin.

Co-morbidities resolved or improved after a gastric bypass



Possible side effects or complications

Most of these complications can arise after any form of surgical intervention, but we list them all again below.
We can divide them into early and late complications.

Early complications

In abdominal cavity

Een naadlekkage is de meest gevreesde complicatie na deze ingreep (1 tot 3 %).

Bij de andere complicaties vermelden we nog een mogelijke bloeding, een verwonding van een buikorgaan, een wondinfectie en een obstructie of passagehinder ter hoogte van het maagdarmstelsel.

Hoewel het risico klein is kan deze toch belangrijke gevolgen hebben: nieuwe operatie, infectie van de buikholte met abcesvorming, verlengde hospitalisatie en uitzonderlijk overlijden.

In general

The most dangerous is thrombosis (blood clots) in the blood vessels of the lower limbs (DVT). These clots can become loose and cause a pulmonary embolism. In rare cases this can result in death. Although several preventive measures are taken, we cannot completely rule out this complication.

Other complications are pneumonia, pulmonary oedema, cardiac arrhythmia and possibly heart attack, infections of the urinary tract, and so on.

The chances of death after surgery are **less than 0.2%.**

Late complications and side effects

Dumping syndrome

In most cases, dumping is just an uncomfortable feeling caused by eating of too much sugar and eating too quickly. Dumping prevents many patients from eating sweets. In most cases, dumping contributes to better weight loss and sustained weight loss and is not therefore seen as a serious health risk. In rare cases, however, the effects can be extremely unpleasant: nausea, perspiration, fainting and diarrhoea after eating.

GERD or Gastro-Esofageal Reflux Desease

Gastro-esofageal reflux (retrosternal burns) is one of the side effects of the omega gastric bypass. Especially reflux of bile in the oesophagus can be disturbing. Even if the frequency is low, this can be a reason to change the omega bypass into a roux-en-y gastric bypass.

Obstruction

As a result of adhesions in the abdomen, which can occur after any kind of surgical intervention in that part of the body, normal intestinal flow can sometimes become blocked. Surgery may be needed to rectify this problem. In case of abdominal pain, acute or progressive, always contact your surgeon. This complication can be life threatening.

Gallstones

After the operation, there is a higher risk of developing gallstones. Some patients choose to have their gall bladder removed as well during surgery, since after the operation it is no longer of use.

Iron, folic acid, vitamin and mineral deficiency

These deficiencies can arise, particularly during the period of weight loss. Blood tests are done at regular intervals to trace any such deficiencies. It is best to take vitamins right from the start.

Chronic anaemia can occur because a lack of iron, vitamin B12 and folic acid. Depending on the results of the blood test, the doctor may prescribe iron, folic acid, vitamin B12, calcium, Vitamin D, etc.

Hair loss

Hair loss often occurs with rapid loss of weight. About fifty percent of patients experience this to some extent during the first year after surgery. However, this hair loss is only temporary and never complete.

Narrowing of the stomach outlet

In rare cases, the new stomach outlet can narrow and give rise to excessive vomiting. In most cases, this problem can be solved by stretching the opening via gastroscopy. A new operation is seldom necessary.

Incisional hernia

Although thanks to keyhole surgery the chances of an incisional hernia are very small, there may be a small hernia of an operation canal. Any hernia can be surgically repaired.

Stomach ulcer

An ulcer can occur near the new stomach outlet in rare cases. This can usually be treated by medication to inhibit the production of acid in the stomach. An ulcer can lead to a perforation of the stomach which will need an urgent operation.

Weight gain after surgery

- ⇨ There may be a few reasons for this:
  1. **Expansion of the new stomach**

If the new stomach is systematically overfilled, it will gradually expand and the quantity of food you can eat at mealtimes will increase. A narrowing of the stomach outlet can also be the cause of a dilatation of the pouch.

2. **Expansion of the stomach outlet**

This can lead to weight gain because the stomach can empty more quickly and the feeling of satisfaction does not last as long, making you want to eat more

3. **Dilatation of the first part of the jejunum**

This is probably the most important reason of weight regain. After a few months the pouch becomes supple and just like an elongation of the oesophagus. This dilated jejunum becomes the new stomach. This may be prevented by banding the bypass.

4. **Uncontroled ingestion of sugars and/or grazing**

This can happen if the dumping feeling disappears. Some patients will eat all day long.

The message here is to keep food intake under control as much as possible. This will contribute to a better result and a good feeling long after surgery.

Pre-operative preparation

Intake consultation

During this consultation a comprehensive explanation will be given about the most common bariatric procedures with their pro's and con's.

An explanation will be given concerning the pre-operative checks. All these checks are an important part of making sure the operation is as safe as possible. These checks are also important to receive reimbursement if this can be the case.

If you are on medication, you must inform a member of the medical team.

Pre-op medical examination.

- **Extensive blood test**: blood count, iron, vitamins B12 and D, liver, diabetes, electrolytes

- X-ray of the lungs
- Examination by gastro-enterologist:
  - Gastroscopy: examination of the stomach with a flexible tube via the mouth (mostly under sedation, seldom under general anaesthesia)
  - echography of liver
- consultation by anaesthetist
- consultation by psychologist (Belgium patients necessary for reimbursement)
- If necessary: consultation by cardiologist, pneumologist, endocrinologist and a.m.

Diet before operation

Protein rich diet (protein shakes)

Thanks to a carbo-free and protein rich diet, the patient can lose 5 till 10 kg in 2 weeks before the operation. This diet is extremely important in case of a fatty liver. The lever will shrink and also the intra-abdominal fat. This creates a lot of space in the abdomen which makes the procedure easier and thus safer.

Practical information on checking in and staying at our hospital

Admission

Admission is usually in the evening (4 PM) on the day before the operation.
If you are on medication, you must inform a member of the medical team.
You will be given a first subcutaneous injection as a precaution against thrombosis.
You will be asked not to eat after midnight on the evening prior to surgery.

Day 0: day of the operation

One hour prior to surgery you will be taken in your bed to the operating area. There, the operating room nurse will meet you and take you to the operating room. After having a drip placed in your arm, you will be put to sleep by the anaesthetist.

The operation usually takes between an hour and hour-and-a-half. Although it is agreed that the operation will start off with keyhole surgery, it may prove impossible to do this. Your doctor will then decide whether or not to proceed with open surgery.

After surgery you will be taken to the recovery room where you stay under further supervision. After waking up you may experience pain in the shoulders as a result of your abdomen being inflated during the operation. You may also feel tension in the abdominal wall and pain around a few operating canals. If everything is going well you will return to your room after 2 or 3 hours.

This pain is usually minor and disappears itself after a few days, although some patients may need some painkillers.

Day 1:

On this day a swallow test may be done to control the pouch and exclude leaks.
It is recommended that you become mobile as early as possible and that you get out of bed and walk around the room.
You may carefully start to drink and eat some yoghurt.

Day 2: return home

If everything is going well, and the pain is acceptable, and you can ingest fluids and liquid food, you will be allowed to leave the hospital. A dietician will come to explain how your food intake must evolve over the weeks to come. You will be given a list of appropriate foods.
If you do not yet feel fit or are experiencing some form of difficulty, we recommend that you stay 1 or more extra days in hospital until everything is under control and you can leave without risk.

Guidelines for discharge from the hospital

Under normal circumstances, you can leave the hospital 2 to 3 days after the operation.

On discharge you will receive the following:

- a letter for your GP containing a report of the operation and guidelines for further monitoring.
- a prescription for the following medication:
  - **Motilium tablets**: to take 15 minutes before meals to aid digestion.
  - **Soluble vitamins**: 1 dose per day (vitamin)
  - **Omeprazole 20**: 1 capsule per day for 3 months to protect the stomach.
  - **Clexane 80** This is injected subcutaneously once a day for ten to twenty days and is best done in consultation with the GP.
- A lab-report: a few days before the first follow-up consultation, a blood test must be carried out (best via the GP). The results can be sent to us. The safest thing is that you collect the result from the GP and bring it with you to the consultation.
- A diet sheet: the dietician will explain this to you before you are discharged. The diet is designed to benefit your stomach: liquid food for 2 weeks, then pureed food for another 2 weeks. After this you can build up carefully. It is still important to have small meals and chew well. Avoid sugars!

Medication

Vitamins

A multi-vitamin-multi-mineral pill should contain at least 100 % of the daily needs and should be taken as long as possible. Regular blood controls will control if these supplements are sufficient.

Hypoglycaemic medication

The regular dose is mostly decreased by half from the moment of the pre-op diet. After the operation this treatment can be continued in most of the cases. Of course good control by the GP and/or endocrinologist is important. Because of the fast evolution of the body a further adaptation of the dose of medication can be necessary.

Blood pressure medication

Also this medication must be reduced in most of the cases under control of the attending physician.

Anti-inflammatory drugs

This medication should be avoided as much as possible. They can cause ulcerations of the mucosa of the stomach and even perforation. If really needed, a short treatment (i.e. a week) and in combination of good protection of the stomach (i.e. Omeprazole) can be admitted.

Other medication

Most of the medication can be used as before with the same effect. In case of large pills an alternative can be taken in the first weeks after the operation.

Smoking

Smoking should be avoided lifelong. Smoking increases strongly the risk on ulcers and even perforation of the stomach.

Care of wounds

- On discharge the **bandage** will be checked and renewed if necessary. If there are no problems the bandage can be left in place and removed two weeks after the operation by your GP, by yourself, or by us at the consultation.
- If the bandage is covered with a special translucent film you can take a shower. If not, it is better to keep the bandage dry.
- If you experience problems with the wound, contact your GP or Dr L. Lemmens.
- **Sport** (such as swimming) and **firm exercise** are best avoided in the first 3 to 6 weeks. On the other hand it is recommended that you start to move as soon as possible, and do some light exercise, condition permitting. After this sports are highly recommended to strengthen your muscles.
- **Sun bathing** (and sun beds) is permitted. However, the operating scar is best left covered for 3 months, in order to prevent hyper pigmentation.

Further checks after surgery

- You will be asked to make an **appointment** with Dr L. Lemmens in the 2nd or 3rd week after discharge.
- A **blood test** will be required after 2 weeks and 3, 6, 12, 18 and 24 months after the operation. Later, regular blood tests at least once and better twice a year are advised. This blood sample is best taken by your GP, so that he can stay up to date on how things are progressing.
- We request, however, that a **duplicate** be sent to us, so that we too can monitor your progress. It is also useful to discuss these results with us at the consultation, or, if this isn't possible, over the telephone. In this way we can follow your weight loss and discuss and treat any problems that could arise.

A few important recommendations:

- Avoid taking a lot of sugar.
- Stick to small meals (avoid overeating"!)
- In the event of a problem contact your GP or Dr L. Lemmens (during consultation hours). You can also contact the hospital department for further help and advice.

STAY IN CONTROL, EVEN WHEN YOU FEEL GOOD!

Diet guidelines after a gastric bypass

Change your eating habits

Shortly after the operation, your stomach will hold about one or two tablespoons. In the months to come this volume may increase very slightly. This means that the amount of food you can eat at mealtimes is small. You will feel full very quickly.

It is extremely important that you learn to recognise the feeling of fullness quickly. This will only happen if you eat calmly and slowly. Chew your food very well and wait a few minutes between each mouthful. Your meal could take 30 to 45 minutes. In the beginning you will easily need 30 minutes to drink a glass of water. It is only by learning this new way of eating that you will get over the problem of volume without pain, nausea and/or vomiting.

The food adjustment required after a gastric bypass consists of several steps, from fluids, to mixed food, and ultimately to protein-rich solids. The meals are much smaller than normal and the food has to be much softer in structure. At each stage it is extremely important that you drink plenty of water.

Step 1: week 1 and 2

Liquid and diluted food

In the first weeks after surgery, it is recommended to eat only liquid and diluted foods to prevent the newly formed stomach pouch from stretching.

Eat:

- Low-fat milk products (low-fat milk, yoghurt, cream cheese, pudding with artificial sweetener)
- Vegetable juices
- Mixed low-fat soup or bouillon
- Fruit puree
- Tea, coffee, non-carbonated water

Step 2: week 3 and 4

Pureed and soft food

Once you can tolerate the diluted food, you can try pureed and soft foods. You can then add the following foods to your diet:

- Small quantities of mixed fruit without sugar.
- Small quantities of mashed potato and boiled mixed vegetables.
- Small quantities of boiled fish, boiled egg or poached egg. If you can digest this, add minced meat or chicken.
- Bread without crusts, filled with soft spreading cheese, meat or fish.

Pots of baby food, which you can buy in the supermarket, are ideal because they have just the right consistency.

Have three meals a day, with an un-sugared low-fat milk product as a morning snack and an un-sugared milk product as an afternoon snack. In the evenings you can also eat a low-fat milk product without sugar.

Step 3:

Protein rich, low-calorie solids

After five or six weeks you can gradually switch to a healthy, protein-rich, low-calorie and more solid diet. This you will find in:

- Low-fat types of cheese
- Fish
- Low-fat meats, preferably chicken and turkey
- Low-fat cream cheese
- Pudding without sweetener
- Cornflakes with semi-skimmed milk or Soya milk
- Low-fat vegetable soup

Important tips

To help you with your new eating habits:

- At the table sit calmly and enjoy your meal.
- Take plenty of time for your meals. Do not watch television while eating and do not walk around.
- Eat calmly; avoid stress and unpleasant discussions at the table.
- Chew very well (tackle any dental problems)
- Take very small mouthfuls.
- Do not drink during or just before the meal because this will give you a feeling of fullness too quickly. Drink between meals, drink slowly and take small sips. Do not drink in the half hour before eating your meal.
- Do not drink carbonated drinks.
- Stop eating as soon as you feel the first sensation of fullness.
- Eating or drinking more will cause nausea and vomiting.

Have a varied and healthy diet

Since the volumes of food you eat are extremely small, it is important that you consume food with a high nutritional value. To compose a healthy diet you can use the food pyramid. This model is made up of layers of different sizes. With every meal, try to choose foods from every layer. At the bottom you will see the foods you need most on a daily basis. For more details, it is best to consult the dietician or nutritionist in our Obesity Centre.

It is best that you have three protein-rich meals every day: breakfast, lunch and dinner. The main meals consist of small quantities of food. You can eat a healthy snack in the morning or afternoon provided it is sugar-free and has a low fat content.

It is important that you drink sufficiently, about one and a half litres of fluid a day.

Some patients are intolerant of certain foods whereas others can eat everything. The situation differs from one individual to another. You can try a food by starting with small quantity. If you cannot tolerate it, wait a month before trying again.

Drinks

- Every day drink about one and a half litres of fluids, spread over the day in small drinks.
- Do not drink during the meal.
- It is best to wait 30 minutes to 1 hour before drinking after the meal.
- Between meals, consume sufficient quantities of low-energy drinks such as water, non-carbonated mineral water, coffee or tea without sugar, low-fat bouillon, fresh mixed vegetable soup, non-carbonated "light" soft drinks, etc.
- If ordinary cows' milk is harder to digest, you can switch over to Soya milk and Soya milk puddings.
- Avoid sweet drinks such as fruit juices, soft drinks, chocolate milk, yoghurt drinks, etc.
- Keep alcoholic drinks to a minimum, at most one or two units a day.

Bread

- Avoid freshly baked bread. It is more difficult to digest and can become stuck in the stomach opening. Eat stale white or light brown bread.
- Sandwiches and bread rolls are harder to digest.
- Toasted bread, toasties and rusks are easier to digest.

Pasta, rice and potatoes

- It is better to have type rich in fibre, such as brown rice, wholemeal pasta, etc. They do not constitute a problem if well cooked.
- Make sure that potatoes and rice are well cooked.
- You can eat croquettes, but be cautious with French Fries due to the hard pieces.

Vegetables

- Make sure that vegetables are well cooked.
- Avoid extremely high-fibre vegetables such as asparagus, celery, onion, pumpkin, pulses, courgettes, aubergines and types of cabbage (except cauliflower and broccoli) unless they are well cooked and well chewed. If you experience difficulties after eating these types of vegetable, they are best avoided.
- Raw vegetables can be gradually introduced.

Fruit

- Start with preserved fruit in its own juice, peeled and deseeded, stewed or mixed.
- Fruit puree can also provide much-needed vitamins.
- If the above fruit preparations are easy to digest, go for soft and very ripe fruit. Start with a mealy apple, a mealy pear, slices of melon, slices of peach, etc.
- Avoid fruits with rough fibrous parts, pips or grains such as nuts, pulses and citrus fruits.

Meat (source of protein)

- Cuts of meat such as roast beef, chops, beefsteak, etc. are stringy and contain a lot of connective tissue, making it difficult to chew into fine pieces. It forms a ball, which is difficult to swallow. It is best avoided.
- Tender meat such as chicken and turkey is a good choice, and above all, rich in protein.
- Avoid eating lots of minced meat, hamburgers or sausages. Choose poultry or minced veal.
- Always prepare meat in such as way as to produce juices. Avoid brown crusts when roasting meat and use a maximum of one tablespoon of fat.
- Avoid sinews, rind and gristle.

Fish

- Fish is always easier to digest than meat.
- It is better to eat poached, steamed or boiled fish, than fried fish.
- Bread-crumbed and ready-made types are not recommended due to the high energy value.

Eggs (source of protein)

- Use a soft method of preparation, such as scrambled egg, poached egg, lightly boiled egg, etc.
- Hard-boiled egg can be mashed with a fork.
- Eat no more than two eggs a week.

Sandwich fillings (source of protein)

- Opt for low-fat meat products such as lean ham, chicken breast, turkey ham and so on.
- Low fat cheese spread, low fat white cheese or low sugar jam.
- Low fat solid cheeses ("light" variations) if well chewed.

Sauces

- Ketchup, pickles, mustard and dressings can be eaten in a "light" form.
- Milk sauce with semi-skimmed milk, creamy sauce with low-fat cream and bouillon sauce can also be eaten, but in moderation.

Spreading fats and cooking fats

- Fats provide twice as much energy as proteins and carbohydrates (sugars). Since fats are "concealed" in most foods, the fats in spreads and cooking oils must be restricted as much as possible. It is recommended that fats be spread thinly on bread and restricted as much as possible with warm meals.
- It is better to use a soft vegetable-based minarine or margarine.

Medication

- Take your medication as prescribed by your doctor.
  Try to avoid large pills or capsules, especially in the first weeks after the operation.

Physical exercise

Not only adaptation of your food intake is important, but also physical exercise. Absorbed calories who aren't burned are stored as fat. To lose weight, your body must burn more calories than the amount of calories taken with the food. This is only possible with physical exercise.

You can start slowly with exercise. When the weight is coming down, exercise becomes easier. Daily exercise of 30 minutes is advised. Chose the activities you like (swimming, light aerobics, walking, gradually jogging, a.m.)