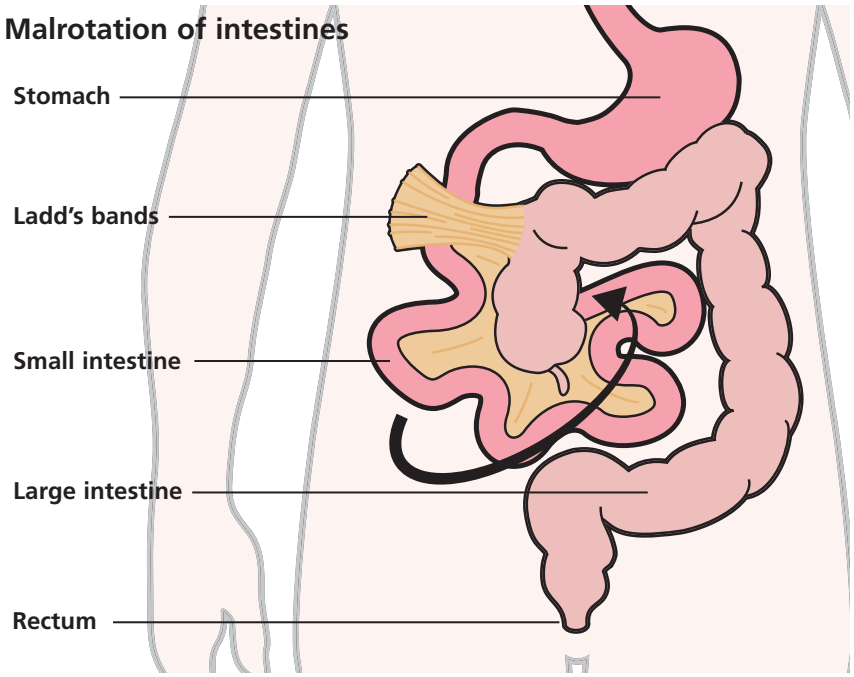
Great Ormond Street Hospital for Children NHS Foundation Trust: Information for Families

Malrotation and volvulus

This leaflet explains about malrotation and volvulus, how they can be treated, and what to expect when your child comes to Great Ormond Street Hospital (GOSH).

Malrotation of intestines

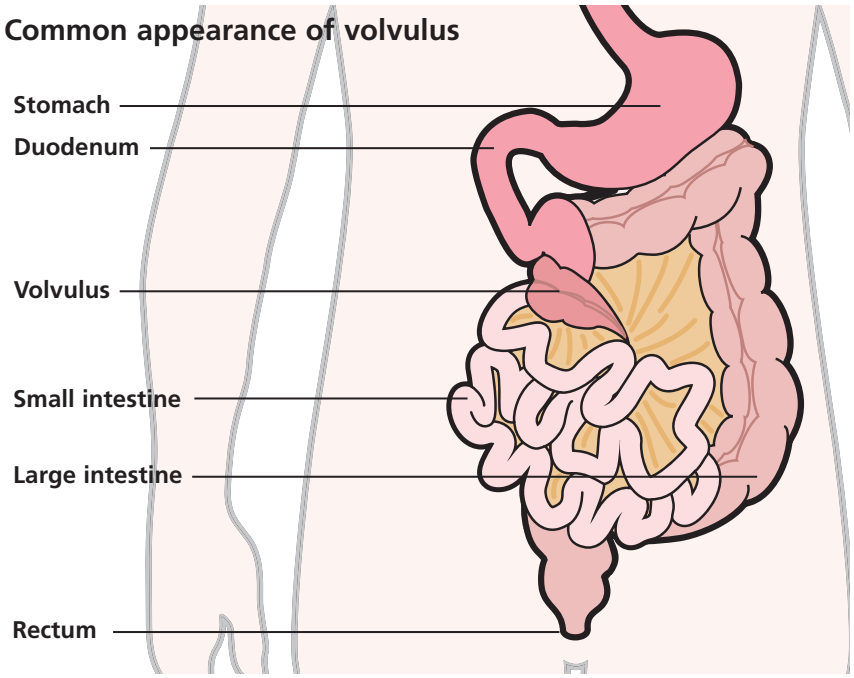


What is malrotation?

Malrotation is an abnormality of the bowel, which happens while the baby is developing in the womb. Early in pregnancy, the bowel is a long straight tube leading from the stomach to the rectum. The bowel then moves into the umbilical cord temporarily while it develops into the large and small bowel.

Around the tenth week of pregnancy, the bowel moves back into the abdomen and coils up to fit into the limited space there. If the bowel does not coil up in the correct position, this is called malrotation.

Common appearance of volvulus



What is volvulus?

This is a complication of malrotation and occurs when the bowel twists so the blood supply to that part of the bowel is cut off. This can be a life threatening problem.

What are the symptoms of malrotation and volvulus?

Malrotation may not have any symptoms. Many people are never diagnosed with malrotation because it causes no problems. However, due to its abnormal position the duodenum may kink or twist, causing a blockage. This means food cannot easily pass through the duodenum to the rest of the bowel for digestion.

The symptoms of volvulus may be the first sign of malrotation. They include sudden bouts of crying and pulling the legs into the body which then stop suddenly. As little or no food or liquid can pass the twisted portion, your child may also pass little or no faeces (poo).This causes cramps, as the bowel cannot push food and liquid past the twisted section of bowel. The twisting also cuts off the blood supply to the bowel, which can lead to the tissues in the bowel becoming inflamed and starting to die.

Vomiting, especially green vomit is another symptom of volvulus, as your child is unable to digest food as usual. If the condition is not treated, your child will become dehydrated which can be life threatening. The symptoms of dehydration may appear in phases and include lethargy, less frequent wet nappies and the soft spot (fontanel) on the top of the head may be sunken.

What causes malrotation and volvulus and how common are they?

We do not know exactly what causes malrotation and volvulus, but it is not due to anything that happened during pregnancy. Malrotation and volvulus affects about one in every 2,500 to 3,000 babies, and boys and girls in equal numbers.

How is malrotation and volvulus diagnosed?

Malrotation and volvulus are usually diagnosed using x-rays. A contrast scan of the digestive system may also be useful as it shows the feeds being unable to pass the twisted part of the bowel. The doctor may also suggest an ultrasound scan, like the ones used in pregnancy, to get a picture of the abdomen. The majority of children with malrotation showing symptoms are diagnosed by the age of one, with many being diagnosed before one month of age if they develop volvulus. Children of any age, however, can be diagnosed with malrotation.

How are they treated and are there any alternatives?

Volvulus is treated in an operation under general anaesthetic. It requires emergency treatment as the bowel tissue can die off from lack of blood-supply, which would stop it functioning properly, and can also lead to problems with infection. The effects of the volvulus, such as dehydration due to the lack of fluids being absorbed, can become serious quite quickly in children, so

there are no alternatives to the operation. It is a life-threatening condition even with surgical repair.

If your child has malrotation without volvulus, your doctor will discuss options for treatment with you. An operation may be suggested or a period of 'watchful waiting' with regular check ups may be preferable. However, volvulus can develop at any point in the future if the malrotation is not corrected.

What happens before the operation?

Children with volvulus are usually transferred to GOSH as an emergency. If your child is dehydrated, they will need a 'drip' of fluids for a while before the operation. Your child will also need a nasogastric tube, which is passed up the nose, down the foodpipe and into the stomach. This will drain off the stomach and bowel contents and 'vent' any air that has built up, which will make your child more comfortable.

When your child is stable, the surgeon will explain the operation in detail, discuss any worries you may have and ask your permission for the operation by asking you to sign a consent form. An anaesthetist will also visit you to explain about your child's anaesthetic in more detail and discuss options for pain relief after the operation. If your child has any medical problems, like allergies, please tell the doctors.

What does the operation involve?

The operation is called a Ladd's procedure. The surgeon can use keyhole (laparoscopic) or open surgery depending on how well your child is at the time. If your child is still unwell, open surgery is usually preferred. The surgeon will straighten out the twisted bowel and check it for any unhealthy areas. If the bowel looks healthy, the surgeon will coil it back into the abdomen in a safe position. Sometimes the surgeon will also remove the appendix during this operation, as it is often on the wrong side of the body in malrotation, which could cause problems in diagnosing appendicitis later in life.

The surgeon will remove any parts of the bowel where tissue has died. The amount can vary, but the surgeon will leave as much of the bowel as possible. If the surgeon has to remove a large part of the intestine, they may need to bring it to the skin surface so that your child can pass faeces (poo). This is called a 'stoma' and if your child needs one, the stoma care nurse specialist will visit you to explain further.

Are there any risks?

Every anaesthetic carries a risk of complications, but this is very small. Your child's anaesthetist is an experienced doctor who is trained to deal with any complications. All surgery carries a small risk of bleeding or infection during or after the operation. Up to one-fifth of children will develop adhesions, which are bands of tissue that block the bowel.

If these cause problems, they would need to be corrected in another operation. Even though the operation is a success, a small number of children will still develop volvulus at a later stage, which will need to be corrected immediately. If the surgeon has to remove a large portion of bowel because it has lost its blood supply and died, your child may need to be fed through a tube into their veins (total parenteral nutrition or TPN).

What happens afterwards?

Your child will come back to the ward to recover. He or she will have been given pain relief during the operation, but this will begin to wear off. For the first few days, pain relief will usually be given through a 'drip' and then, when your child is more comfortable, in the form of medicines to be swallowed.

Initially, your child may need to be fed using TPN so the stomach and bowel can start to heal. Once the bowel starts to work, the doctors will let you know when you can start to feed your child again, starting with small amounts, and increasing the amount as tolerated.

Your child will be able to go home once they are feeding well and comfortable.

When you go home

Your child's abdomen may feel sore for a while after the operation, but wearing loose clothes can help. Your child will need to have regular pain relief for at least three days. As well as the medications, distracting your child by playing games, watching TV or reading together can also help to keep your child's mind off the pain.

The stitches used during the operation will dissolve on their own so there is no need to have them removed. If possible, keep the operation site clean and dry for two to three days to let the operation site heal properly. If your child needs to have a bath, do not soak the area until the operation site has settled down. You may need to come back to hospital for an outpatient appointment after the operation. We will send you the appointment date in the post.

What is the outlook for children with malrotation and volvulus?

The outlook depends on how quickly the malrotation and volvulus are diagnosed and treated as this in turn can influence the amount of damage to the bowel. If your child had a large amount of bowel removed, he or she may need to stay on TPN for a longer period. Adhesions can form after any abdominal surgery, and can cause further problems such as blockage or pain.

You should call the hospital if:

- your child is in a lot of pain and pain relief does not seem to help
- your child is vomiting, especially green liquid, or has signs of dehydration
- your child has a high temperature of 37.5°C or higher, a paracetamol does not bring it down
- the operation site is red or inflamed, and feels hotter than the surrounding skin
- there is any oozing from the operation site

If you have any questions, please call Squirrel Ward on 020 7829 8818

Notes

Compiled by the Department of General Surgery
in collaboration with the Child and Family Information Group

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