Malrotation and Volvulus

This leaflet provides information about malrotation and volvulus. If you have any further questions or concerns, please speak to the staff member in charge of your baby's care.

What is malrotation?

In early pregnancy, the bowel develops as a tube and differentiates into the large and small bowel. This growth leads to the bowel exiting the abdominal cavity of the foetus through the umbilicus into an extra cavity in the umbilical cord. By week 12 of pregnancy, the bowel returns into the abdomen but during this process it rotates and becomes fixed in the abdomen at certain points. When this rotation and fixation does not happen or happens abnormally, this is called malrotation. The bowel will be abnormally positioned in the abdomen; it happens for one in every 2,500 to 3,000 babies, affecting boys and girls equally.

Why is malrotation a concern?

When intestinal rotation and fixation occur normally, the blood supply to the bowel has a wide base that is similar to a wide curtain that is fixed at both ends and this is unlikely to twist. In malrotation, the blood supply to the bowel is passing through a narrow base (the curtain is bunched together and ends are very close to each other), which places it at risk of twisting around itself or volvulus.

What is volvulus?

When the malrotated bowel twists around its own base, leading to compression of the blood supply to the bowel (blood cannot reach the bowel), this is called volvulus and is a surgical emergency.

How is malrotation / volvulus diagnosed?

Typical symptoms in a newborn infant are bilious (grass green) vomits and abdominal pain in a baby that is pale and lethargic. Sometimes not all these signs are present but, as green vomiting is not normal in newborn babies, it will be investigated. There are many other causes for green vomiting that will be investigated by your medical team after malrotation is excluded.

Once malrotation / volvulus is suspected, a doctor will examine your baby and a special x-ray will be performed. Your baby will have a tube inserted into their stomach from either their mouth or nose to drain their stomach (OG / NG tube). This tube will be used to inject a dye through the tube into the stomach and a series of x-rays is then taken to show the

passage of the dye through the stomach, the first part of the bowel called duodenum and then into the small bowel. This will show us if the position is normal or malrotated and if there is a twist. The study will be done in our radiology department. You will be able to go with your baby but may not be able to be in the room during the study. During the study, your baby will be turned in certain positions to obtain the images needed for diagnosis. This will not hurt your baby.

How are they treated?

Malrotation / volvulus is a surgical emergency. It will need an operation under general anaesthetic, as the kinking of the blood supply can lead to part or all small bowel being damaged or dying. There are no alternatives to surgery. The surgeons will talk to you about the procedure.

What happens before the operation?

Your baby will need a ‘drip’ (a small cannula in a vein) for IV fluids and the naso-gastric tube (NG tube), which was passed from the nose into the stomach will be kept in place to drain the bile and the air from their stomach. This will make your baby feel more comfortable.

What does the operation involve?

The operation is called a Ladd’s procedure. The surgeon will make a cut over the upper abdomen and will have to untwist the bowel to release the kink of the blood vessels. They will give some time for the blood to reach the bowel again and then they will assess if it is healthy before widening the base of the ‘curtain’ where the blood vessels pass towards the bowel.

As the bowel cannot be put back into a ‘normal’ position and will be sitting in an arrangement of small bowel on the right side of the abdomen and large bowel on the left, the appendix which would be sitting in the left upper abdomen is removed. This is to avoid problems in diagnosing appendicitis later in life.

Occasionally, some or all the bowel will have sustained significant injury and will not be able to survive and this segment would need to be removed. If the removed segments represent a significant percentage of your baby’s bowel, they may need long term support for their nutrition and growth. Sometimes the bowel viability is not clear and it is left with a plan for another operation in a few days’ time. The surgeons will discuss with you the various options but may not be able to give you information on their likelihood prior to the procedure.

What happens after the operation?

Your baby will come back to the neonatal unit on a ventilator to help them breathe.
The nurses will give pain-relieving medicines to your baby so that s/he is comfortable.

They will be given intravenous nutrition (PN) through a long line to ensure their healing power is supported as well as their growth. The amount of green fluid aspirated from the stomach and their stools will be monitored over the following days and milk feeds will be started when the bowels are working again. The milk feeds are increased slowly until full feed volume is reached. If you wish to breast feed, the nursing staff will teach you how to express and store your milk to feed your baby when they are ready. Your baby will be able to go home once he or she is feeding well and starting to gain weight.

Long term complications and follow-up

Following discharge from the neonatal unit, there will be regular check-ups to monitor your baby's progress. Your baby will be seen in the outpatients department, which may take place at your local hospital. Your baby should be able to feed and wean normally.

The risk of your baby having a twist again is minimal, due to the widening of the bowel base and the healing tissues that appear inside the abdomen after the operation, which fix the bowel in place.

You will be advised that, if your baby has green vomits again, with abdominal distension (a big tummy) and they are not passing any wind or stool per rectum, you will need to get them checked in the hospital.

If your baby has had a significant percentage of small bowel removed, their follow-up may be more complex and may include other teams as well: dietitians, gastroenterologists etc.

If St George's Hospital is not your local hospital

Once your baby has had surgery and made a good recovery, i.e. when their specialist medical and nursing requirements are fewer, your baby will be transferred back to the care of your local hospital. This transfer is a sign of progress and will not occur until your baby is ready. It will allow you to be closer to home and become familiar with your local healthcare professionals.

Useful sources of information

BLISS

Bliss is a support group which can offer support and advice to families with babies with a range of conditions.

Bliss
1st Floor North
10-18 Union Street
London
SE1 1SZ
Enquiries: 020 7378 1122
Email: hello@bliss.org.uk Website: www.bliss.org.uk

Use your smartphone to scan the QR code (you may need to download a QR code scanning app).

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit www.stgeorges.nhs.uk

Additional services

Patient Advice and Liaison Service (PALS)

PALS can offer you on-the-spot advice and information when you have comments or concerns about our services or the care you have received. You can visit the PALS office between 9.30am and 4.30pm, Monday to Friday in the main corridor between Grosvenor and Lanesborough wings (near the lift foyer).
Tel: 020 8725 2453 **Email:** pals@stgeorges.nhs.uk

NHS Choices

NHS Choices provides online information and guidance on all aspects of health and healthcare, to help you make decisions about your health. **Web:** www.nhs.uk

NHS 111

You can call 111 when you need medical help fast but it's not a 999 emergency. NHS 111 is available 24 hours a day, 365 days a year. Calls are free from landlines and mobile phones. **Tel:** 111

AccessAble

You can download accessibility guides for all our services by searching 'St George's Hospital' on the AccessAble website (www.accessable.co.uk). The guides are designed to ensure everyone – including those with accessibility needs – can access our hospital and community sites with confidence.

Reference: NNU_MAV_03 **Published:** May 2023 **Review date:** May 2025