



## Fundoplication: information for families

A fundoplication is an operation used to treat gastro-oesophageal reflux. There are different surgical techniques but the most common is a Nissen's fundoplication, named after the surgeon who developed it. It uses the top of the stomach to strengthen the sphincter so it is less likely to allow food, drink or acid to travel back into the foodpipe. This information sheet from Great Ormond Street Hospital (GOSH) explains about the fundoplication operation and what to expect when your child comes to GOSH for treatment.

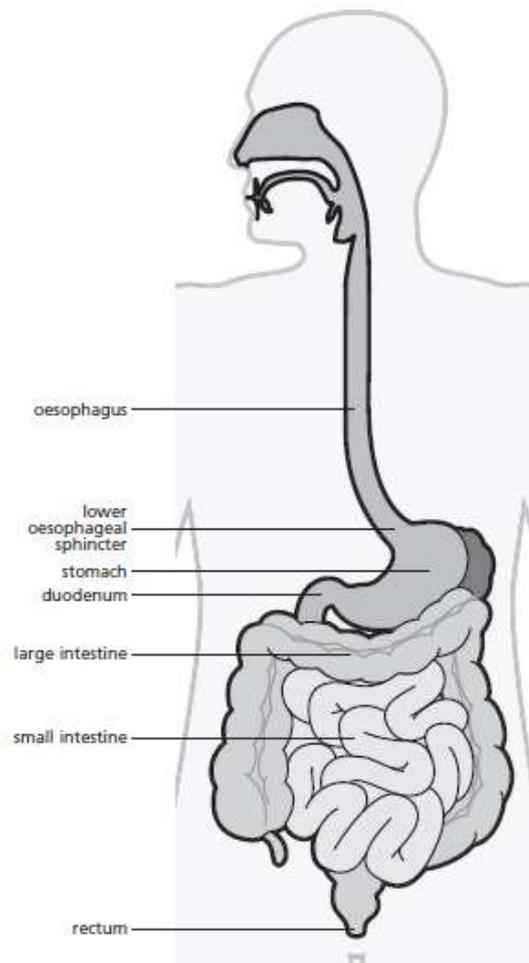
When a baby or child has gastro-oesophageal reflux, the food and drink travels down the foodpipe as normal. However, some of the mixture of food, drink and acid travels back up the foodpipe, instead of passing through to the large and small intestines. As the food and drink is mixed with acid from the stomach, it can irritate the lining of the foodpipe, making it sore. This is gastro-oesophageal reflux disease.

Some children also breathe some of the mixture into the windpipe (aspiration), which can irritate the lungs and cause chest infections.

Gastro-oesophageal reflux is caused by a combination of factors which may include a wider than usual opening in the diaphragm around the oesophagus and a weakened sphincter (ring of muscle) at the base of the oesophagus.

If your child has severe gastro-oesophageal reflux which is not controlled with medication or is causing significant complications, the surgeon may recommend an operation called a fundoplication to prevent reflux. Before reaching this decision, the severity of your child's reflux will usually be assessed with an upper GI contrast study and a pH or impedance study. As every child is different, the decision to recommend surgery will only be made after these assessments have been completed.

Some babies and children have a gastrostomy (surgical opening into the stomach) formed during the same operation so that feeds are delivered directly into the stomach. For more information, please see our *Living with a gastrostomy* leaflet.



## What happens before the fundoplication operation?

You will already have received information about how to prepare your child for the procedure in your admission letter. You may need to come to GOSH before the operation so that your child can have a pre-admission assessment to check that they are well enough. This appointment may involve taking blood samples and other tests.

The fundoplication operation is always carried out under general anaesthetic. It is important that your child does not eat or drink anything for a few hours before the anaesthetic. This is called 'fasting' or 'nil by mouth'. Fasting reduces the risk of stomach contents entering the lungs during and after the procedure. You will be informed the night before the procedure of the time that your child should be 'nil by mouth' – in other words, have nothing to eat or drink before the anaesthetic. Fasting times are provided in your admissions letter

It is equally important to keep giving your child food and drink until those times to ensure they remain well-hydrated and get adequate nutrition. This may involve waking your child in the night to give them a drink which we recommend.

## Operation day

The doctor will explain the operation in more detail, discuss any questions you may have and ask you to sign a consent form giving permission for your child to have the operation.

### Important

The person bringing your child for the operation should have 'Parental Responsibility' for them. Parental Responsibility refers to the individual who has legal rights, responsibilities, duties, power and authority to make decisions for a child. If the person bringing your child does not have Parental Responsibility, we may have to cancel the operation.

An anaesthetist will visit you to explain the anaesthetic and pain relief after the operation. If your child has any medical problems, such as allergies, please tell the doctors.

## What does the operation involve?

The fundoplication operation is usually carried out using keyhole surgery (laparoscopy). The surgeon uses a telescope, with a miniature video camera mounted on it, inserted through a small incision (cut) to see inside the abdomen. Carbon dioxide gas is used to inflate the abdomen to create space in which the surgeon can operate using specialised instruments that are also passed through other smaller incisions (cuts) in the abdomen.

The operation itself has two parts. Firstly the surgeon will examine the diaphragm to check the size of the opening around the oesophagus. If it is too loose, the surgeon will tighten this. The second part of the operation involves wrapping the upper part of the stomach (fundus) around the base of the oesophagus and loosely stitching it in place. This tightens the sphincter enough to reduce reflux but not so tight as to affect swallowing.



## Are there any risks?

There is a chance that keyhole surgery will not be possible for your child. Sometimes the surgeon will not be able to carry out an operation using the keyhole method for technical reasons, or because of unexpected findings. If this is the case, the surgeon will carry out the operation using open surgery through a larger incision (cut) instead.

Every anaesthetic carries a risk of complications but this is very small. Your child's anaesthetist is an experienced doctor who is trained to prevent and deal with any complications. Any surgery carries a small risk of infection or bleeding.

The operation stops the reflux and vomiting associated with gastro-oesophageal reflux but does not cure the underlying cause of the reflux. Some children 'retch' after the operation. This can often be managed by changing the amount and frequency of feeds given although some may have longer term problems with retching.

Some children are at increased risk of the operation becoming less effective over time which may require a second procedure to 're-wrap' the fundus. If you are concerned that the operation is not remaining effective, please discuss this with your surgeon.

## What happens afterwards?

Your child will return to the ward to recover and their breathing, heart rate and temperature will be monitored closely for the first couple of days. After an anaesthetic, children sometimes feel sick, may have a headache, sore throat or feel dizzy, but these effects do not last for long.

They will usually have an intravenous infusion of fluids (drip) for a few days to allow the stomach to rest and heal. Strong pain relief medicines will also be given through a drip to begin with, but are gradually reduced and replaced with milder pain relief medicines given as tablets, liquids or suppositories when your child is eating and drinking again.

After keyhole surgery, some older children may complain of shoulder pain and some crackling under the skin, caused by the carbon dioxide escaping into the tissue just under the skin. This does not usually last long and gradually improves over a day or two.

If your child does not have a gastrostomy (either formed previously or created during this operation), they will have a naso-gastric tube for the first few days so that air and fluid building up in the stomach can be drained away. A naso-gastric tube is inserted through the nose, down the foodpipe and into the stomach. This is inserted while your child is under the anaesthetic.

Your child will be able to drink when drainage from the naso-gastric tube or gastrostomy has slowed down and the fluid draining away is clear.

For the first few weeks, we recommend a soft or sloppy diet. Your surgeon will give you more information about starting feeds again after the operation.

Once your child is eating and drinking as normal and has recovered well from the operation, they will be able to go home. Most children stay in hospital for about three to five days after this operation. Your surgeon will tell you whether or not to continue giving your child any reflux medicines as previously.

## Are there any long-term effects of the operation?

Although the fundoplication operation is very successful at improving a baby's gastro-oesophageal reflux disease and the symptoms associated with it, a quarter of all patients develop some long-term effects afterwards, some of which we are able to treat.

- **Changes in feeding pattern** – The operation makes the stomach slightly smaller. For some children this can mean that they may need to have smaller volumes of feed given more regularly. The dietitian will advise you on how best to feed your child after the surgery.
- **Burping and vomiting** – After the fundoplication operation, some children are unable to burp or vomit. In some this is temporary, but in many this is permanent.

- **Gas bloat** – This is the name given to wind trapped in the stomach. It can usually be corrected by giving your child smaller feeds more frequently, rather than a few large feeds each day. If your child has a gastrostomy tube, the wind can be released by leaving it on the 'reflux' setting, which allows the wind to escape through the gastrostomy.
- **Dumping syndrome** – This is a combination of things including nausea, retching, sweating, diarrhoea and a drop in blood sugar level. It is caused by food travelling through the stomach at a much faster rate than usual so none of the goodness in the feed is absorbed. This can also be corrected by giving your child smaller feeds more frequently. These symptoms can take up to six weeks to settle.
- **Swallowing problems** – Occasionally your child may have difficulty swallowing after the operation. If the wrap is thought to be too tight, the surgeon may suggest oesophageal dilatation to weaken it. Sometimes, however, it is due to poor coordination of the oesophagus which can be helped by changing your child's diet and feeding patterns.
- **Recurrence of reflux** – In some children, reflux symptoms can come back. This is

because the fundoplication is failing (coming undone). Your surgeon may recommend that the operation be performed again or alternative methods of managing reflux be investigated.

## What is the outlook for children who have had a fundoplication?

In some children, the symptoms associated with gastro-oesophageal reflux disease disappear with or without treatment, usually by the age of two.

However, in some children, gastro-oesophageal reflux disease is more of a long-term condition and can have a serious effect on both the child and family's quality of life. The options for treating gastro-oesophageal reflux disease are improving all the time, with new medicines and surgical options being discovered alongside a better understanding of why a child develops gastro-oesophageal reflux disease.

Most children see an improvement in symptoms, especially after the fundoplication operation, although some long-term effects may continue to be troublesome. Your child will continue to be reviewed regularly by their local team.

## Further information and support

If you have any questions, please telephone 020 7405 9200 and ask for the ward from which your child was discharged.