



Orbital box osteotomy

This information sheet from Great Ormond Street Hospital (GOSH) explains about the operation called orbital box osteotomy, which is used to treat craniofacial disorders. It explains how to prepare your child for surgery as well as what to expect in hospital afterwards.

What is an orbital box osteotomy?

Orbital box osteotomy is an operation used to correct abnormal eye socket shape or placement. Reshaping the orbits (eye sockets) means that widely spaced eyes can be moved closer together, and bringing the orbits forward can also mean that the eyes sit deeper in the skull so are less likely to be damaged.

Orbital box osteotomy may be carried out at any point from mid-childhood onwards. Children with the following types of craniofacial conditions may benefit from this operation:

- Hypertelorism (widely spaced eyes) which may be a feature of many conditions
- Cranio-fronto-nasal dysplasia
- Fronto-nasal dysplasia
- Midfacial cleft
- Orbital dystopia

It may be the only form of treatment needed or it may be just one of a series of operations carried out throughout childhood and adolescence.

What happens before the operation?

Pre-admission clinic

Preparing for a planned operation, test or procedure before coming in to hospital avoids delays and reduces the risk of cancellation. The results of any tests and investigations are available in plenty of time and can also be re-checked if they are not within the normal range. Your child may need various blood tests before the operation – this depends on your child's medical condition and the nature of the surgery that is planned.

The doctors and/or nurses will meet you and your child to take down their medical history and any other information needed before your child is admitted to hospital. The nurses will explain about any care your child will need before and after the operation. If your child has any medical problems, particularly allergies, please tell the doctors about these. Please also bring in any medicines your child is currently taking.

You may be seen by one of the team carrying out your child's operation and be asked to give permission for the procedure by signing a consent form. If you give your consent at the pre-admission appointment, you will need to confirm that you still agree to the procedure on the day of admission.

One of the team will explain about the types of anaesthesia that are used at the hospital, and also about options for pain relief after the operation, test or procedure. If there are any questions or concerns about your child's anaesthesia, an anaesthetist may come to see your child in the pre-admission clinic.



The night before surgery

You will be asked to give your child a bath or shower and hairwash before surgery.

It is important that your child does not eat or drink anything for a few hours before the operation. 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. In broad terms, this is six hours for food (including milk), four hours for breast feeding and two hours for clear fluids before the procedure.

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.

On the day of surgery

Please come to Puffin at the time stated in your admission letter. One of the nurses will check that your child is well enough for the operation, complete some paperwork with you and take some baseline observations of their temperature, heart rate and breathing. They will also put an identification wristband on your child.

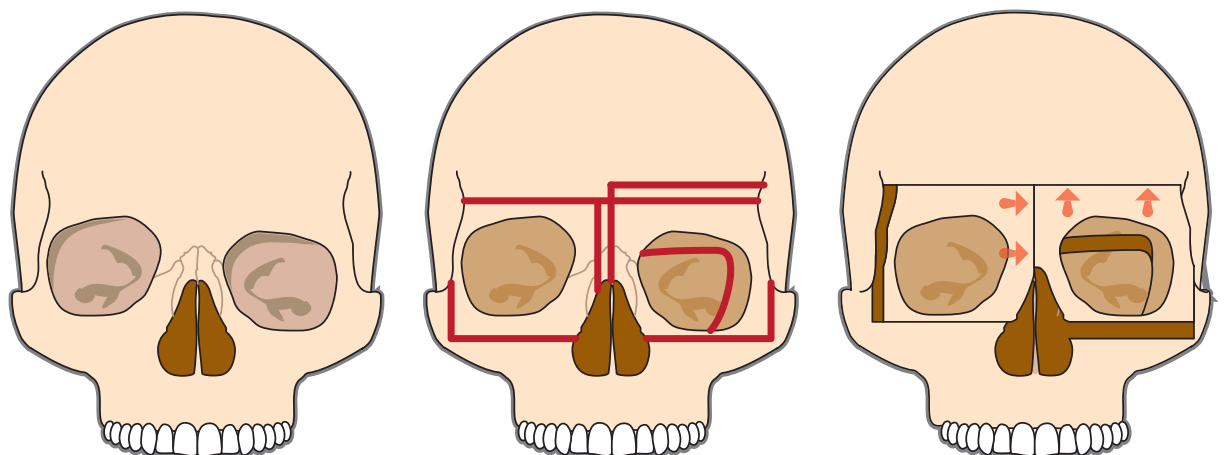
If you did not give your consent for the operation at the pre-admission appointment, a member of the surgical team will visit you to explain about the operation and ask you to sign a consent form. The site of the operation will be marked with a marker pen. All children are seen by the anaesthetist on the day of the operation.

What anaesthetic is given?

Your child will be given a general anaesthetic by an anaesthetist who specialises in giving anaesthetics to babies and children. Both parents will be able to go with your child to the anaesthetic room and stay until they are asleep. This usually involves your child breathing some anaesthetic gas. Later, a tube is passed into the airway (trachea) to safeguard breathing. A cannula (thin, plastic tube) is put in a vein and usually left in place for a short time after the operation. Fluids can be given to your child through this tube during the operation and afterwards if necessary.

What does the operation involve?

Orbital box osteotomy is carried out while your child is under general anaesthetic. When your child is under general anaesthetic, the surgeon will clip your child's hair just over the incision site and fix the rest of their hair out of the way. They will make an incision





over the top of your child's head from ear to ear. They will then pull the skin and soft tissues over the forehead downwards to expose the skull.

To access the upper orbit, the bone over the forehead is removed, exposing the linings of the brain. This access allows protection of the eyes and brain while the bone cuts are made. Additionally, an incision inside the upper lip is made to access the lower cuts of the 'box'. This heals very well in the gum line.

The surgeon will then make a series of cuts around each orbit so that the entire socket can be moved while the eye balls remain protected. They will reposition each socket so that it is more closely spaced than previously and also more level if they were uneven before. Sometimes a wedge of bone needs to be removed at the bridge of the nose.

Once the surgeon is happy with the result, the sockets are fixed in position with plates and screws or strong stitches that will dissolve over the next few months as the bone heals. Bone grafts may be used to fill any gaps created when the sockets were moved. The skin is then closed over the incision site and held in place with dissolvable stitches.

Children have a drain inserted which will be left in place to drain off any fluid that collects after surgery – this will be removed a day or two later when no longer needed. Finally, the surgeon will put a head bandage over the operation site. Your child will then be taken to the Recovery area to start to wake from the anaesthetic.

Are there any risks?

Healthy children usually cope well with the anaesthetic, but the risk increases if your child has other problems.

All surgery carries a small risk of infection or bleeding. To reduce the risk of infection, your child will be given an initial dose of antibiotics during the operation. This will continue as an infusion into a vein (intravenously) for seven days after surgery. Very rarely, the cerebro-

spinal fluid (CSF), which is a watery liquid that surrounds the brain and spinal cord acting as a 'cushion', also becomes infected, causing meningitis. This will need additional treatment with intravenous antibiotics.

Your child will be monitored very closely during and after the operation to identify any blood loss. A blood transfusion is sometimes required but the surgeon will have ensured that donated blood of the correct type is available if needed.

There is a very small risk that the eyes and optic nerve leading from the eye to the brain could be damaged during this operation leading to sight loss. The surgeons are careful to protect all parts of the eye and the muscles which move the eye while working around the eye socket.

Your child's head and face will look swollen and bruised after the operation. This particularly affects the eyes following orbital box osteotomy and the nurses will clean them carefully in the days following the operation. Swelling tends to get worse for the first two to three days and then start to improve. The nurses will check your child's head bandage and re-apply it if it is getting tight.

The incision site will start to heal and will eventually fade until it can hardly be seen. The hair will also start to re-grow in the days following surgery.

Are there any alternatives?

Orbital box osteotomy is the only way of narrowing widely spaced eyes or levelling up eyes that are uneven.

What happens after the operation?

Once your child has started to recover from the anaesthetic, they will be brought back to Koala Ward to continue recovering. At the end of the day, the doctors will visit you to talk about the operation.



Your child will spend the first night in the High Dependency Area on the ward, where a nurse will monitor them closely to watch for any signs of bleeding and fluid imbalance. They will carry out regular observations of their breathing, heart rate and temperature throughout the rest of the day and night. Your child may feel sick after the operation, but the doctors will give them medicines to reduce this. The sickness should pass within a couple of days. Your child will be able to start eating and drinking as soon as they feel like it.

The nurses will also assess your child's pain and give them regular pain relief for the first few days – intravenously to start with and then by mouth when they are eating and drinking. The intravenous infusion of antibiotics will continue for seven days.

Your child's eyes will be very swollen after the operation so the nurses will clean them gently to make them more comfortable. Your child should sit and lie in as upright position as possible to reduce any swelling. The swelling is temporary and will start to improve in a few days. The nurses will remove the head bandage and drains when they are no longer needed.

Going home

When your child is recovering well and eating and drinking sufficient amounts, you and your child will be able to go home. On the third or fourth day of the stay, the nurses will wash your child's hair gently with a mild shampoo and show you how to do it safely at home.

They will also give you a copy of our discharge information which explains how to look after your child and what signs to look out for over the next few weeks.

Follow up appointments

Your child will have a series of appointments after the operation – we will give you details before you go home.

What is the outlook for children who have had an orbital box osteotomy?

The orbital box osteotomy operation changes the shape of the eye sockets but will not improve the function of the eyes. This operation provides a firm basis for future surgery to improve head shape. The results of surgery are usually good and overall most parents are happy with the results.

Further information and support

Headlines – the Craniofacial Support Group – is the main support organisation in the UK for families of children and young people affected by a craniofacial disorder. Visit their website at www.headlines.org.uk.

If you have any questions, please telephone the Craniofacial Clinical Nurse Specialists on 07768 526 449 (Monday to Thursday from 9am to 5pm).
Out of hours, call Koala Ward on 020 7829 8826.

You can also seek medical advice out of hours by telephoning the GOSH switchboard on 020 7405 9200 and asking them to page the craniofacial doctor on call.