

Oxford Heart & Lung Centre

Pectus Correction surgery

Information for patients



Introduction

This booklet is designed to provide information about your forthcoming pectus correction surgery.

We appreciate that coming into hospital for pectus correction surgery may be a major event for you. The Information in this booklet will hopefully allay some of the fears and apprehensions you may have and increase your understanding of what to expect during your stay in the Oxford Heart Centre, at the John Radcliffe Hospital.

Our aim is to provide a high quality service to our patients. We would therefore welcome any suggestions you may have. A patient satisfaction survey can be found in the information folder by every bed on the Cardiothoracic Unit, alternatively please speak to a member of the senior nursing team.

Modified Ravitch procedure

In the modified Ravitch procedure, the rib cartilages are cut away on each side and the sternum is flattened so that it will lie flat. One or more bars (or struts) may then be inserted under the sternum to ensure it keeps its shape. This is the procedure we use for complex pectus anomalies, predominantly rib deformities and for pectus carinatum.

The operation involves making a horizontal cut from one side of the chest to the other. Drains are inserted on each side of the chest to remove any fluid from the surgical site and the wound is closed using dissolvable stitches. If a strut is inserted it is intended to remain in place permanently but may be removed if it causes pain or other problems.

The Nuss procedure (minimally invasive repair of pectus excavatum – MIRPE)

The Nuss procedure involves placing one or two curved steel bars behind the sternum, forcing it back into a more normal shape. Drains are then inserted on one or both sides of the chest to remove any fluid from the surgical site. This procedure is currently only used for pectus excavatum.

In children, the bar is removed after two years once permanent reshaping has occurred. In adults, the bar is currently left in place for at least three to five years. Some patients prefer to keep the bar permanently as it reduces the risk that their pectus anomaly will come back.

What are the advantages of the Ravitch procedure and the Nuss procedure?

Advantages: the modified Ravitch procedure

Research shows that 97 per cent of patients stated they have very good or excellent results with this procedure.

Once the procedure has been performed, it is extremely unlikely that the anomaly will happen again.

Advantages: the Nuss procedure (minimally invasive repair of pectus excavatum – MIRPE)

It is a minimally invasive operation – only two small incisions are needed (an incision of four to five centimetres on each side of the chest; one or two chest drain incisions of one to one and a half centimetres each).

It does not involve cutting or removal of cartilage.

There is generally minimal blood loss during the procedure. It is unusual for a patient having this operation to require a blood transfusion.

It is generally a quicker operation than the Ravitch procedure.

Research shows that approximately 80% of patients have very good or excellent results with this procedure.

What are the disadvantages of the Ravitch procedure/the Nuss procedure?

Disadvantages: the Ravitch procedure

There is a large incision, although this normally fades to a thin line.

The procedure is a more extensive operation than the Nuss technique.

It is possible that the anomaly will reoccur once the bar is removed.

Disadvantages: the Nuss procedure

As it is quite a new procedure there is not yet reliable data on how well it works in the longer term.

Generally the procedure is straightforward but it can sometimes be more difficult to carry out in adults than in children.

It is possible that the anomaly will reoccur once the bar is removed.

Though very rare, injury to the heart or lungs when positioning the bar can happen. Your surgeon will use various techniques to minimise this risk and will discuss these with you prior to the procedure.

What are the benefits of surgical treatment for pectus anomaly?

Surgery will improve the shape of your chest which may improve your self-confidence and self-esteem. Some people who have had the operation say that they also feel physically better following the procedure. But it is important to know that there is insufficient evidence either for or against the idea that pectus

correction surgery will improve any problems with your heart or lungs.

It is important to remember that it is not possible for us to say to exactly what extent we will be able to improve the shape of your chest with surgery. Your surgeon will discuss this with you. Though many people will feel more positive about themselves following the corrective procedure, many continue to need and receive counselling and other support for poor self-esteem or concerns over body image.

What are the risks of surgical treatment for pectus anomaly?

Overall both the Nuss and Ravitch procedures have good safety records. However, complications can occur with any surgery. For pectus anomaly correction surgery, the specific risks include:

- bleeding: rare
- wound infection: rare
- collection of fluid around one or both lungs (pleural effusion): rare
- air leak from either lung (pneumothorax): rare
- quick healing of the surgical wound, which results in the scar being red, thickened and itchy (keloid scarring): rare
- long term discomfort from the sternal bar: unlikely
- damage to the heart from bar placement: very rare
- prolonged stay in hospital for recovery from surgery: rare

Preparing for your operation

It is important to use the time between your referral for surgery and the procedure itself to improve your overall level of fitness.

If you smoke, it is important you stop. Smoking is particularly bad for your lungs and your heart and will increase the risk of you developing a chest infection following your operation. This would mean you would have to stay in hospital longer. There is online support from the NHS available to help you quit smoking: You can also ask your GP, pharmacist, or phone Quitline on 0800 002 200 or the NHS Smoking Helpline on 0800 169 0 169.

Pre-admission clinic

You will be asked to attend a pre-admission clinic before your operation. We will carry out tests to check your general state of health and to make sure that you are well enough to have surgery.

Tests may include:

- **blood tests** – to check your general state of health
- **chest x-ray** – to check your heart and lungs
- **computed tomography (CT) Scan** – to get a detailed view of the anomaly
- **electrocardiogram (ECG)** –to look at the electrical activity of your heart
- **medical photography** – to record your chest deformity before surgery
- **MRSA swabs** – to check for the presence of MRSA bacteria on your skin or in your nose. This is a routine test for all patients admitted to the hospital and is important in the control of hospital acquired infections such as MRSA (sometimes referred to as “superbugs”).

Pain relief

Many people who have had pectus anomaly correction surgery say that it is a very painful operation. Please be assured that we will do everything we can to control your pain during your time in hospital. There are several pain relief methods we can use:

Epidural – PCEA

Medication is given via a fine tube placed in your back which numbs the area around the wound and drains. You will also be able to give extra pain relief yourself by pressing a button. The medication is set by the anaesthetist so there is no risk of overdosing.

Patient controlled analgesia (PCA)

Pain relieving medication is given via a pump into the drip in your hand. You will be able to control your medication by pressing a button. Alternatively your nurse can control your medication if she feels your pain is not controlled. Again, the dosage is set so there is no risk of overdosing or addiction.

Oral analgesia

Once you are eating and drinking again, we will give you pain relief tablets at regular intervals.

We will discuss with you which pain relief is best for you at which time and will regularly check on your pain. If you experience pain during your time in hospital please tell us immediately and we will work to control it.

Managing your pain well will allow you to move around and carry out your physiotherapy exercises. Performing these exercises will improve your lung function and so reduce the risk of a chest infection developing after surgery.

Before you go home we will discuss pain relief with you. You will leave the hospital with a supply of pain relieving medication for use at home.

What happens on the day of my operation?

You will be admitted to the hospital on the day of your operation. The Pre-admission nurse will tell you what time you need to arrive. You need to report to Theatre Direct Admission on level 1 of the John Radcliffe Hospital when you arrive. You will need to fast (not eat) for several hours before your operation – your pre-admission nurse will discuss this with you. We will ask you to have a bath or shower with an antiseptic lotion, to use a mouthwash and a nasal cream prior to your admission. The pre-admission nurse will give you these products along with instructions on how to use them. Before you go to theatre we will ask you to change into a clean hospital gown. Please do not wear underwear. Your legs may be fitted with TED-anti thrombus stockings which will prevent blood clots forming when you are not exercising your legs as much as usual.

When it is time for your operation you will be taken to the anaesthetic room, transferred onto a trolley and connected to heart and pulse monitors. Your anaesthetist will insert a small needle in your arm to give you drugs to make you go to sleep. If you are having an epidural this will also be inserted before the operation starts.

Once you are asleep a tube is inserted into your windpipe which is attached to a breathing machine called a ventilator. To help the anaesthetist monitor your condition you will have other drips inserted, one in the large vein in your neck to give you fluids and one in your wrist which will monitor your arterial blood pressure.

Throughout the operation the anaesthetist will be looking after you and will give you medication to keep you asleep and relieve pain.

After pectus anomaly surgery

Immediately after the operation we will take you to the recovery ward to recover from the surgery. A nurse will be with you at all times. You will be awake but you may feel quite drowsy from the anaesthetic.

We will monitor your heart rate, blood pressure and oxygen levels. You may have a catheter (small tube) to drain the urine from your bladder, meaning you will not need to go to the toilet. We will use drips in your veins to give you medication and fluids. You may have chest drains. These remove any fluid gathering around the site of your operation. To control your pain, we will give you anti-inflammatory drugs and continuous morphine or an epidural. Nausea and vomiting can be a side effect of morphine and so we will also give you anti-sickness medication.

Once you are awake we will move you to the cardiothoracic ward. As you start to recover, we will remove the heart monitor, catheter, and drips. If you have chest drains they will remain in place for the moment.

Your surgeon will decide how long you need to lay flat for. Once you are able to get up a nurse will help you to leave your bed and sit up in a chair. This, and any exercises explained by your physiotherapist, will help to improve your lung function after the operation.

If you have chest drains in place we will check the amount of fluid collecting in them every few hours. Once there is only a small amount of fluid draining out each day, and once a chest x-ray shows your lungs are back to normal, we will remove the drains. Please remember that it may take several days before they are ready to be removed.

Can my friends and family visit me on the ward?

We believe that family and friends are important to you when you are in hospital. While we encourage people to visit, you will probably find that you are very tired immediately after your operation. To help you to get the rest that you need, the preferred **visiting hours on the cardiothoracic ward are 3pm to 8pm every day.** If this is difficult for your relatives, then please speak to the nursing staff to discuss alternative arrangements. We have a rest period between 1pm and 3pm: all visiting is discouraged during this time.

Unfortunately the wards are not an appropriate environment for flowers or plants.

On admission you will be given telephone numbers for the ward. Please nominate one member of your family to phone in to enquire about your progress and ask all other family and friends to contact that person for updates.

Will I receive physiotherapy when on the ward?

Physiotherapy will be an important part of your recovery, both on the ward and when you go back home. We will encourage you to walk around the wards as much as you can. The nursing and the physiotherapy teams will be there to help you.

Most patients will need to walk every hour or so at a pace that makes them short of breath. When you are ready, your physiotherapist will encourage you to progress to climbing stairs.

It is important to sit up out of bed as soon as you are able to or allowed but you will need to avoid bending or twisting your spine. The physiotherapists will show you how to sit up by

bending your hips instead of your spine. Once sitting, you will swivel to the edge of your bed to avoid twisting your trunk. To stand, extend at your hips keeping your back straight.

We may teach you breathing exercises, a supported cough technique to assist the removal of phlegm, shoulder exercises and will offer you advice on posture as needed.

Before you leave hospital, your physiotherapist will discuss the exercise programme you need to continue once home.

Going home after surgery

When will I be ready to go home?

We will discuss your discharge date with you. Before you leave us, we will make sure that:

- Any chest drains have been removed.
- You are able to move and walk up stairs.
- Your pain is well controlled.
- Your bowel function is returning to normal.
- We have arranged an appointment for you with a practice nurse to remove any stitches.
- You have arranged transport to get you home safely.
- You will have support from friends and family once you are home. (You will not need 24-hour nursing care but you will need someone to help you with cleaning and any heavy tasks.)
- You have a discharge letter from the surgical team.
- You have a follow-up appointment booked with the surgical team.
- You have a list of the medications you will need to take and a full prescription for each.

Will I need to continue my physiotherapy once home?

It is very important to continue exercising once you leave hospital and go home. The physiotherapy team will give you information on the exercises you will need to do.

Actions to avoid during your recovery

For the first month following surgery you should not:

- bend from the waist – you must only bend from the hips
- twist your trunk
- sit in a slumped position
- push through your arms
- lie on your side
- lift any heavy objects.

For two months following surgery you should not lift any heavy objects.

For three months following surgery you should not drive. You will need to discuss when you can return to travelling in a car or driving with your surgeon and your insurance company. Your surgeon may give you specific advice.

It is important to remember that you must, by law, wear a seatbelt – there are no medical conditions which justify automatic exemption from the law.

If you wish to play contact sports or participate in sports such as weightlifting, golf or tennis speak to your surgeon about when you can go back to these activities.

Useful websites

www.pectus.org/

A British site giving information on pectus anomalies, their causes, and possible treatments. The site has been put together by staff at the Royal Brompton & Harefield NHS Trust.

egap.evidence.nhs.uk/IPG310

This site contains a useful briefing paper on the Nuss procedure which has been written for members of the public and those considering having the surgery.

www.chkd.org/Services/NussProcedure/

Website of the hospital at which Donald Nuss developed – and continues to perform – the Nuss procedure.

www.pectusdeformity.com/

www.marfan.org/marfan/

The site of the American National Marfan Foundation, which offers support to those affected by Marfan syndrome (commonly associated with pectus anomaly).

Contacts

If you have any question or concerns please contact one of the numbers below.

Thoracic Nurse Specialist

(Monday to Friday 7.45am to 4pm)

01865 572653

01865 741166 and ask for bleep 1184 if urgent

Cardiothoracic Ward Coordinator

(Anytime)

01865 741166 and ask for bleep 1971

Cardiothoracic Ward

(Anytime)

01865 572661/2

Matron

01865 572649

01865 741166 and ask for bleep 1185 if urgent

If you need an interpreter or need a document in another language, large print, Braille or audio version, please call **01865 221473** or email **PALSJR@ouh.nhs.uk**

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