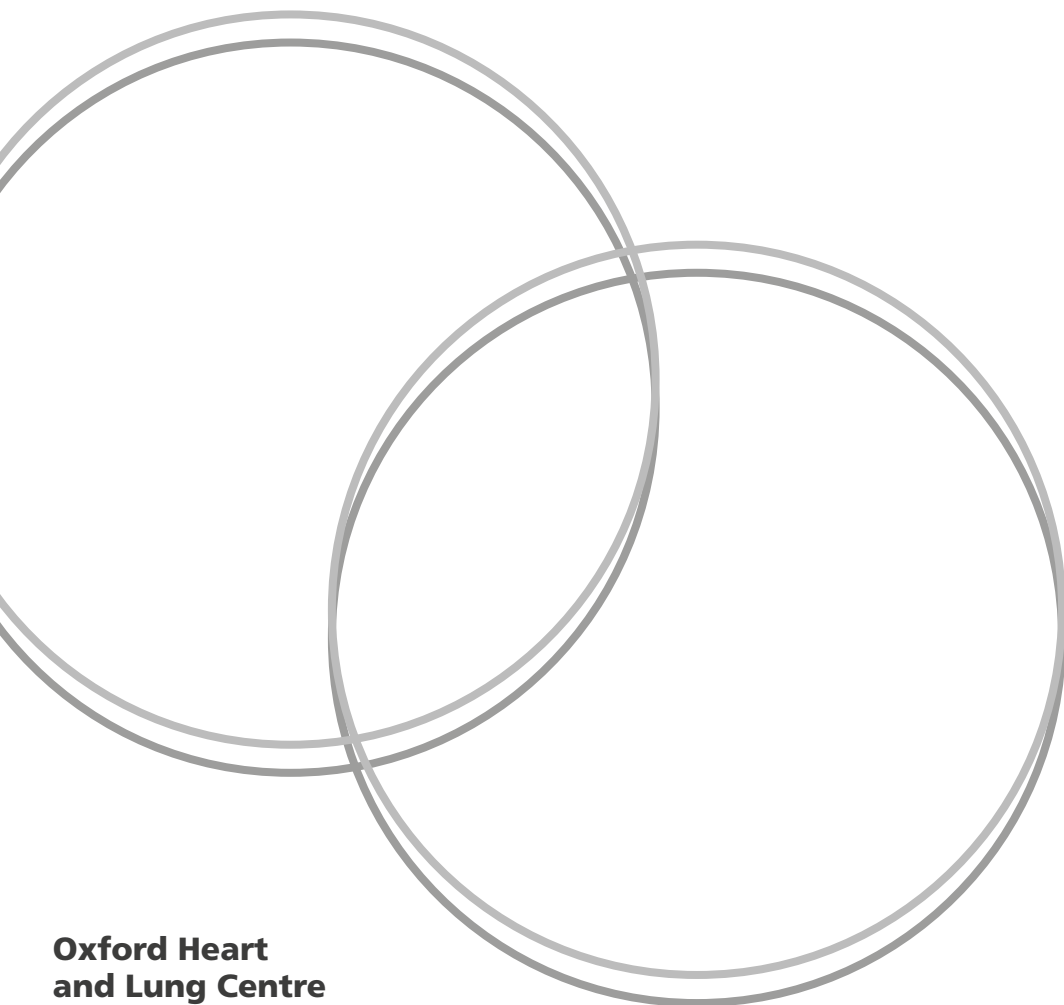




Oxford University Hospitals  
NHS Foundation Trust

# Pectus Correction Surgery

Information for patients



Oxford Heart  
and Lung Centre

## **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.

## **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.

In children, the bar is removed after three years once permanent reshaping has occurred. In adults, the bar is currently left in place for at least three to five years.

## **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 folded meshes may then be inserted under the sternum to ensure it keeps its shape. This is the procedure we use for complex pectus anomalies.

The operation involves making a vertical cut across the lower part of the sternum. 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.

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

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

It is a minimally invasive operation – only three small incisions are needed (an incision of four centimetres on each side of the chest).

It does not involve cutting or removal of cartilage.

There is generally minimal blood loss during the procedure. It is exceptionally rare 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.

## **Advantages: the modified Ravitch procedure**

This procedure is suitable for patients with very complex deformities, or very little flexibility of the chest wall.

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

### **Disadvantages: the Nuss procedure**

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

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

Though exceptionally 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.

### **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.

## **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, some 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
- 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

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 NHS Smoke free on **0300 123 1044**.

## 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
- **computed tomography (CT) Scan/magnetic resonance imaging (MRI) scan** – to get a detailed view of the anomaly
- **electrocardiogram (ECG)** – to look at the electrical activity of your heart
- **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:

### **Patient controlled analgesia (PCA)**

You may be given a PCA for pain relief immediately after your surgery. This is pain relieving medication which is given via a pump into the drip in your hand. You are able to control the amount you receive by pressing a button. 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. 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.

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, 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. 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 may give you a continuous morphine infusion. 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, and drips.

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.

## **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. Visiting times are currently 8am to 8pm, but please see the ward staff on admission to clarify these. If there are any queries regarding visiting then please ask the nurse in charge of the cardiothoracic ward.

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?**

A physiotherapist will visit you following your operation and provide you with advice to aid your recovery. 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.

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 or nursing staff 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.

## **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:

- You are able to move.
- Your pain is well controlled.
- 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 list of the medications you will need to take and a full prescription for each.

## **Will I need to continue my walking once home?**

Following hospital discharge you should continue a similar amount of walking that you were doing in hospital followed by a gradual increase of distance and pace. It is very important to continue regular walking as part of your recovery.

### **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, (you can use your arms gently for balance if required)
- lie on your side
- lift any heavy objects, no more than 2KG in front of body and 5kg on shoulders.

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

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 weight lifting, golf or tennis speak to your surgeon about when you can go back to these activities.

## **Contacts**

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

### **Advanced Nurse Practitioner, Thoracic Surgery**

Telephone: **01865 572 653**

Telephone: **01865 741 166** and ask for bleep **1184 if urgent**

### **Macmillan Advanced Nurse and Therapist Practitioners**

Telephone: **01865 223 874**

Telephone: **01865 741 166** and ask for bleep **8113 (if urgent)**

### **Cardiothoracic Ward**

(Anytime)

Telephone: **01865 572 662**

### **Ward Co-ordinator**

Telephone: **01865 741 166** and ask for bleep **1971**



## Further information

If you would like an interpreter, please speak to the department where you are being seen.

Please also tell them if you would like this information in another format, such as:

- Easy Read
- large print
- braille
- audio
- electronic
- another language.

We have tried to make the information in this leaflet meet your needs. If it does not meet your individual needs or situation, please speak to your healthcare team. They are happy to help.

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