Pectus: The Condition and its Treatment

What is it?

It is a deformity of the chest wall where the sternum (breastbone) is either sunken **(pectus excavatum)** or raised **(pectus carinatum)**.

It occurs in approximately 4 out of 1000 people and is more common in men.

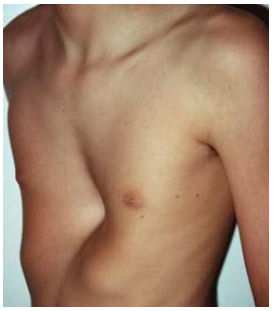

Figure 2: pectus excavatum (funnel chest)

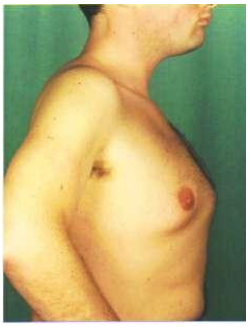

Figure 2: pectus carinatum (pigeon chest)

What causes it?

The condition probably arises due to poorly co-ordinated and uneven growth of the cartilages between the ribs and breastbone. As the cartilages lengthen, the sternum is either pushed inward (excavatum) or outward (carinatum)

Other medical conditions such as scoliosis may also be associated with a pectus. Pectus deformities are unusual at birth but most commonly become obvious during early adolescence following the growth spurt.

How will it affect you?

The vast majority of people with a pectus deformity live a very normal and happy life; some however report problems such as palpitations or shortness of breath during strenuous exercise.

Some people may suffer from lack of self-confidence, and are understandably reluctant to expose their chest so avoid activities where this might be necessary, e.g. swimming.

Surgical treatment

There are multiple treatments available for reducing the pectus deformity and your consultant will discuss these and outline the most suitable for you. However, corrective pectus surgery on the bone and cartilage parts of the chest wall involves one of two main types of procedure, both requiring a general anaesthetic.

The modified Ravitch procedure. Here, an incision is made either lengthwise or across the pectus, allowing the cartilages to be removed and the sternum made mobile enough to bring it either forwards (in the excavatum type) or backwards (carinatum type) to correct the pectus. The sternum is secured in the correct position with one or more metal bars or a mesh. The bar(s) are generally removed at 18 months to two years after surgery. The mesh stays in place permanently.

The Nuss procedure. This is only used for pectus excavatum and not all patients will be suitable for the operation. Here, a stainless steel bar is inserted though small incisions on either side of the chest wall and placed under the sternum moving it forward, the bar is then secured to the chest wall. The bar is kept in position ideally for 2 – 3 years and is removed often as a day case procedure. Depending upon the severity of the pectus excavatuum 2 bars may be used and also a small incision may be made at the front of the chest to aid placement of the bar(s).

How do I prepare for the surgery?

If you smoke, giving up as early as possible before the operation reduces the risk of breathing and other problems after surgery.

For help giving up smoking please discuss with the Thoracic Specialist Nurses or Contact “Smokefree Norfolk”, the stop smoking service in Norfolk on 0800 0854 113. Your GP or health centre. Your doctor, practice nurse or health visitor can also give advice to help you stop smoking.

Alternatively click on-line to www.nhsdirect.nhs.uk for advice

If you have loose teeth or crowns, dental treatment before your operation will reduce the risk of damage to your teeth when the anaesthetist needs to put a tube into your throat to help you breathe.

Please bring with you any medicines, tablets or inhalers that you are taking. These will need to be kept securely for the safety of all patients. They will be returned to you on your discharge.

If you feel unwell when you are due to come in to hospital, please telephone for advice. For example, contact the hospital if you have had symptoms of diarrhoea and vomiting within the last 48 hours that are not related to your medical condition.

Before Surgery

Before the surgery you will attend the pre-operative assessment clinic led by the Thoracic Clinical Nurse Specialists , this appointment will include an examination, blood tests, a chest x ray and ECG (tracing of the electrical activity of your heart). You may also meet the anaesthetist. At this appointment you will have an opportunity to discuss the procedure and any after care issues you may have. Your medications will be reviewed and, if necessary, adjusted for surgery.

Surgery Day

Most patients are admitted on the morning of surgery to the Same Day Admissions Unit (SDAU).
How long your surgery takes will depend on exactly what needs to be done. Your surgeon will be able to discuss this with you.

Following surgery you will wake up in the recovery department and when settled will be transferred back to the ward.

On the ward the nurses will monitor your progress and make sure you are comfortable. You will also see the surgical team regularly.

You will be given clear instructions about when you should stop eating and drinking before your operation. It is important to follow these.

If you are taking medicines, you can take these as usual unless a member of your surgical team or the anaesthetist has asked you not to. If you take drugs to stop you getting blood clots or drugs for diabetes you will be given specific instructions.
You will need to take a bath or shower and to remove any make-up and nail varnish.

You must remove contact lenses but you can wear your glasses, hearing aid, denture or wig to the operating theatre. You will need to tie back long hair but avoid using metal clips. You will need to remove jewellery, although a wedding ring may be taped.

You will usually be asked to wear support stockings to help prevent a blood clot forming in the legs. These stockings remain on for the duration of your stay. You may also be given a small daily injection to help to try and prevent this complication.

You will be given a clean cotton gown that ties at the back. If you wish to wear your briefs or pants they must be cotton.
You may be given a pre- medication (“premed”). This is the name for drugs that are sometimes given before an anaesthetic although today they are not often used. This may make you drowsy so you will need to stay in bed after you have been given it.

What will happen when you are called for your operation

A support worker will arrive and take you to theatre on your bed after checking your details. A nurse will accompany you to the anaesthetic room where staff will introduce themselves and check your identification bracelet, your name, hospital number and the consent form.

You will be attached to monitors to measure your blood pressure, heart rate and oxygen levels continuously.

The anaesthetist will place a small plastic tube (through which drugs will be given) in the back of your hand or arm.

Before you go to sleep you will be given oxygen to breathe through a face mask.

Immediately after your operation

You will be taken to the recovery room where the nurses will observe you carefully until you are ready for transfer to your ward. You will have an oxygen mask over your nose and mouth and you will be sitting up in bed. You may have a drip which will be used to give fluids until you are able to eat and drink again, usually later that day.
It is important to take deep breaths and cough to keep your lungs free from secretions

Depending on the procedure, there may be drains left around the site of surgery at the time of your operation and the nursing staff will help you look after these. The drains will be removed following review by the surgical team and the stitches used to secure them will be removed by your practice nurse or district nurse approximately 7 days later.

Analgesia

Your pain management will vary depending upon the full nature of your operation. You may have an epidural inserted in the anaesthetic room prior to surgery. This is a small plastic tube inserted into your back which can provide continuous pain relief in the form of a local anaesthetic and analgesics (pain relief). A catheter will be inserted into the bladder whilst you are in theatre. The epidural will remain in until the chest drains are removed and you can take oral pain medications and then the urinary catheter will be removed.

Some patients may have different pain relief management such as a paravertebral and/or patient controlled analgesia (PCA). These will be explained by the medical and nursing staff as required.

Anti-sickness medication can be given to reduce nausea caused by the general anaesthetic and analgesia.

Risks of surgery

As with any type of surgery there will of course be a scar. Pectus operations involve quite major changes to the chest wall and the recovery can be very painful but this will be managed effectively on the ward with support from the specialist nurses from the acute pain team.

There is a small risk of wound infection but pre-operatively you will be given some anti-bacterial shower gel to wash with before your admission and whilst you are in hospital. This reduces the risks even further.

Correction of the pectus may not be total and recurrence can sometimes occur.

Breathing

You will be given oxygen to assist your breathing after the operation and the nursing staff will closely monitor this. It is important that you are as comfortable as possible so you can take deep breaths and are able to cough easily. You will be seen by the

physiotherapists who will also help you by showing you breathing exercises. Please inform the nursing staff if you are uncomfortable and feel restricted in taking deep breaths and moving so they can review your pain medication.

Mobility

You will be encouraged to mobilise with assistance as soon as possible, and again the physiotherapists and nursing staff will help with this. Once you have been shown exercises to do it is important that you continue to do these independently throughout the day whilst in hospital and also once discharged.

Eating and Drinking

You will be able to eat and drink once you are fully awake and feel able to.

Length of stay

This will depend on the procedure performed and your own recovery, but generally patients remain in hospital for between 5-7 days. The surgeon will discuss your progress with you and will advise you on your length of stay.

Discharge

Please arrange in advance for someone to be able to collect you from hospital. Discharge is usually in the morning.
We would expect you to be back to the same level of mobility on discharge as you were on admission, though this will not take place immediately and you will have residual pain and discomfort from the surgery. You will not need someone with you all the time but please bear in mind that you must not lift heavy objects.

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.

The consultant will see you in outpatients 4-6 weeks following discharge. The surgical team will advise you on a suitable time to return to work. You will need to avoid any contact sports or sports such as golf and tennis until seeing your consultant in outpatients. You may be advised to avoid some of these activities until any bar(s) are removed.
You may not fly until the surgical team advises it is safe to do so.
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
- Lie on your side
- Lift any heavy objects

For three months following surgery you should not drive. Please discuss this with your consultant when you see him in clinic.
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. Placing a small

rolled up towel between your chest and seat belt can aid in minimizing the discomfort felt.

If you have any further queries please contact the Thoracic Nurse Specialists on 01603 287473 and 01603 2863696.
Further information can be obtained from www.pectus.org

This Trust is a member of Intran. Intran is a 24hour interpretation and translation service for patients. Services include: telephone access to foreign language trained interpreters, British Sign Language, Lip Speakers for the Deaf and Braille translations.