

Pectus Excavatum

(PECK-tuss Ex-ka-vay-tum)

What is pectus excavatum?



Pectus excavatum is the medical name for a depression of the breastbone (sternum) which makes a child's chest look sunken or pulled in. The depression may be the same on both sides of the chest or deeper on one side.

This condition may get worse as the child gets older. The cause of pectus excavatum is unknown.

Children with pectus excavatum may have some physical problems, but the main reason for surgery is usually to improve how they see themselves. Children with pectus excavatum are often very self-conscious of their appearance and they may avoid showing their chest.

When is surgery recommended?

Not all children with a pectus excavatum need surgery. For some children, posture and exercises may help. Surgery is usually recommended for children with deep depressions in their chest. Surgery is best completed between 12 to 16 years of age, but can be done even into the early 20's. The surgeon will decide what age is best for your child to have surgery.

What happens before surgery?

Several days before the surgery, your child will have an appointment in the Pre-op Clinic in the Same Day Surgery Unit. A Child Life Specialist and a nurse will help you and your child prepare for surgery. Your child will also see the Anesthesiologist. This is the doctor who will give your child medication, called an anesthetic, to help him or her sleep through surgery. You will be given a checklist of instructions to follow the day before surgery.

The day of your child's operation

On the day of the surgery you will bring your child to the Same Day Surgery Unit. Here, your child will be asked to change into pajamas or hospital clothing.

When your child is dressed, a nurse may start an intravenous (IV) or the nurse may choose to have the intravenous started by the operating room staff. The IV will be used to give your child fluids and medication before, during and after the surgery.

When your child is called to the operating room (OR), you will be invited to go with him or her. You will be greeted by the OR staff when you arrive. Both parents may wait here with the child while the surgical team makes final preparations. When the team is ready, your child will be walked to the operating room. It may be possible for one parent to go with the child into the operating room for the first minutes, while your child is being settled. The parent will be asked to change into hospital clothing (scrubs) which will be provided by the staff in the Same Day Surgery Unit.

What happens in the operating room?

After being greeted by the operating room staff,

- If not already in place, an IV will be started in an arm or hand to give your child fluids and medications.
 - The anesthesiologist inserts an epidural catheter, a thin tube, into a small space between the bones in your child's back, near the spinal nerves. Pain medication will be delivered to your child through this catheter and will provide pain relief for him or her during the first days of recovery.
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Your child will be given a general anesthetic so that he or she will be asleep during surgery and not feel any pain.

Please note, the operating room staff will determine the best time for you to leave your child. When directed, please change back into your own clothes and make yourself comfortable in the waiting area. The surgeon will look for you there, once the surgery is complete.

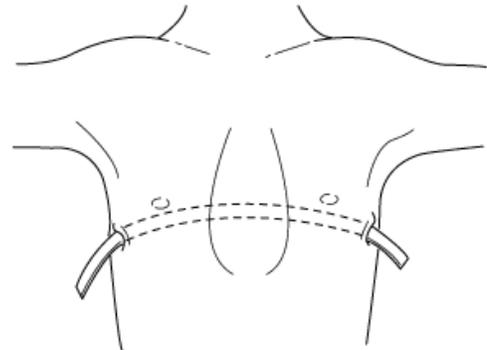
Although each case is unique, the average length of time necessary to complete the surgery is 2 hours. This includes preparation time as well as the surgical procedure. Please do not be alarmed if the surgery for your child takes longer.

When your child is asleep:

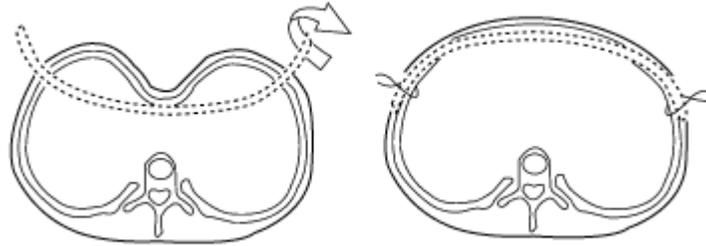
- A tube called a urinary catheter will be inserted into his or her bladder, to drain urine. When a patient is receiving pain medication through an epidural catheter, passing urine is difficult so the urinary catheter will keep your child comfortable. The urinary catheter will remain in place until the epidural catheter is removed.
- The anesthesiologist will insert a breathing tube in your child's throat to ensure that your child continues to breathe well and to give anesthetic gases and oxygen throughout the surgery. The anesthesiologist then takes his or her position at your child's head and monitors him or her closely to make sure he or she is safe and pain free while the surgeons work.

The surgeon makes 2 small cuts called incisions on either side of the chest. A curved metal bar is measured and shaped for each patient.

The bar is inserted under the sternum and then turned to lift the sternum. The bar immediately corrects the defect and then allows the tissues to remodel over time into the correct shape.



Turning the bar to lift the sternum and correct the defect.



What happens after surgery?

Your child will go to the Post Anesthetic Care Unit (PACU) after surgery. In the PACU, your child will be closely monitored until he or she is fully awake. As soon as possible, the nurse will bring you to the PACU to be with your child. Only one parent can visit at a time.

From the PACU your child may be moved to the Pediatric Unit, an inpatient ward where a team of nurses and doctors will monitor your child closely.

Your child will be connected to a cardio-respiratory monitor. This allows the nursing staff to quickly assess his or her breathing and heart rate. The monitor is connected to the nursing station and sounds an alarm (both a light and a tone) when a change in heart or respiratory rate is detected. If you desire, your nurse will further explain how the monitoring system works.

What will my child look like after surgery?

After surgery your child will have a small incision on each side of the chest. These incisions will be closed with stitches or sutures under the skin. On the surface only small paper tapes, called Proxi-Strip® skin closures, are seen. There may be some orange or brown discolouration on the skin of your child's chest. This is from the soaps used to prepare the skin before surgery.

May I stay with my child?

On the Pediatric Unit, we are pleased to offer a cot for one adult to stay overnight at the bedside. If both parents would like to stay overnight, please ask about one of our housekeeping rooms. You may also be able to reserve a room at the nearby Ronald McDonald House. This would allow one parent to be at the bedside and the other only a short distance and a few minutes away.

May we have visitors?

Parents are encouraged to spend as much time as possible with their child. You are an important member of the team as we work towards your child's recovery. We realize, however, that other obligations may require your attention as well.

We ask that you limit the number of people at the bedside. You should also make sure that visitors are free of any illnesses, such as colds or the flu, that might complicate recovery if passed to the patients.

Visiting hours will be posted in the unit and may vary according to hospital and patient needs. We ask you to help us maintain a restful environment for all our young patients.

What can my child eat and drink?

When it is safe for your child to drink, he or she will be given ice chips or sips of clear fluids. When your child can tolerate fluids, your child will gradually return to his or her usual diet.

How can my child's pain be relieved after surgery?

Pain control is very important for your child's recovery. Pectus excavatum repair is a painful procedure, therefore we have to use various methods to prevent pain after surgery. The amount and type of pain is different for each child.

Managing pain with an epidural catheter

The epidural catheter is used to deliver pain medication into the space surrounding the spinal cord in the middle of your child's back. The doctor calculates the amount of pain medication based on your child's weight. A pump provides a steady flow of medication to give your child the best possible pain relief. As the medication is given continuously and not in separate doses, the effects do not "wear off".

The epidural can control about 80 to 90% of a patient's pain after chest surgery. Please be aware that we cannot take away all discomfort. Your child will be checked closely to make sure his or her recovery is as comfortable as possible. If you feel your child needs more pain medication, please tell the nurse.

Risks and side effects of epidural pain management

The most serious risk of epidural placement involves the potential for spinal cord or spinal nerve injury by the epidural needle or catheter. This is because the spinal cord is very close to the epidural space at this location in the back. This happens very rarely. Other risks include headaches, infection or bleeding at the catheter site. These risks are mentioned to be complete, but rest assured that they are extremely rare events.

While the epidural is in place, your child may experience side effects from the medication. These include itching, nausea or vomiting, and depressed consciousness or breathing. These side effects are generally mild and are usually remedied with other medication.

What activity can my child do with an epidural in place?

With the epidural in place, your child should feel comfortable enough to practice deep breathing and coughing exercises. The nurse will decide if your child can safely move, get up, and walk with the epidural in place.

The nurses will regularly check to be sure your child is safe and pain free. These checks will continue during the time the epidural is in place and up to 24 hours after it is removed, depending on the medication that is used.

A doctor and nurse from the Acute Pain Service will also visit your child. These members of the health care team will provide instructions to the staff about methods to provide the best pain management possible.

The epidural is taped in place along your child's back. The end of the tubing may be taped to a small board and pinned to the back of your child's hospital gown. If your child is getting continuous medication, the end of the tubing is connected to a pump. It is very important that your child does not play with or pull at any part of the epidural tubing.

The epidural can be used for several days, until your child's pain can be managed with medications through the intravenous or taken by mouth. Remember that the urinary catheter, which drains urine from the bladder, will remain in place until the epidural catheter is removed.

How is the epidural catheter removed?

With your child sitting at the edge of the bed, the nurse will remove the tape and gently pull out the epidural catheter. This is usually not painful, but your child may be a little frightened. The nurse will put a bandage over the place where the epidural was removed.

The nurse will tell you when your child can start taking other types of pain medications. When you go home, the surgeon will give you a prescription for pain medication.

What activities can my child do in hospital?

A physiotherapist will help your child get out of bed for the first few days and learn how to move safely. During this time your child will have an epidural to relieve pain so that he or she can move and do activities.

You will need to know how to help your child move safely. The physiotherapist can help you learn how to do this. Practice with the physiotherapist in the hospital, so you will know what to do at home.

Bring in a pair of supportive shoes for your child to wear during physiotherapy.

While in the hospital, your child must follow these strict orders about movement and activity:

Every day

- deep breathing exercises every hour while awake
- NO bending at the chest or waist
- NO twisting
- NO rolling from side to side (“log rolling”)

Day 1 after surgery

- help to get out of bed to the chair
- moving with help, if tolerated

Day 2 after surgery

- help to get out of bed to the chair
- walking with help

Day 3 until discharge from hospital

- walking with less help
- walking up and down stairs
- the Physiotherapist will teach you how to help your child move safely at home and how you can help the first few days

How do I take care of the incisions?

The incisions are very small, one on either side of the chest. There are white paper tapes (called Proxi-Strip® skin closures) on each incision. These tapes will slowly come off on their own. If they do not fall off after 7 to 10 days, you may gently soak them off with water.

Keep the incisions clean and dry. Your child may have a bath or shower 6 days after the surgery.

When can my child go home?

The usual hospital stay is 5 to 6 days. The surgeon will decide when your child can go home. This will depend on whether:

- your child's pain is well controlled
- your child is drinking well
- your child can move around and walk safely
- the incisions are healing well
- the bar is correctly placed

Your child will need help at home for at least 7 to 10 days from the time of discharge from the hospital. Please make arrangements for time off work if needed.

Before you go home, follow-up appointments with the surgeon will be made for your child. If any blood tests are needed, please have them done before the appointment so that the surgeon will have the results available at the follow-up visit.

What activities can my child do at home?

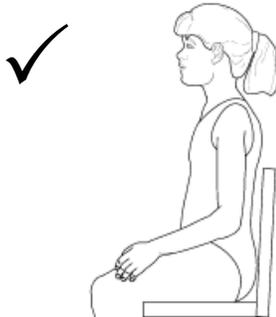
Your child will gradually return to normal activities over the first 4 to 12 weeks after surgery. Walking is a good exercise. Your child should walk often to build up his or her strength. You will have to help your child move in and out of bed for the first weeks after surgery.

For the first month after surgery, your child needs to remember to bend at the hip. He or she should not slouch or slump down when sitting. Good posture helps keep the bar in place. Please remember that your child must not “log roll” onto either side.

For the first 2 months, your child should avoid heavy lifting. This includes carrying a backpack for school.

For several months your child should not take part in karate, gymnastics or contact sports. Check with your surgeon to know when you child can play sports again.

These pictures show examples of good posture and poor posture.



Sitting straight



Slouching

Will the bar affect my child's health care?

Your child's health care providers need to know that he or she has had surgery for pectus excavatum and the bar is inside his or her chest. Arrange to get your child a MedicAlert® bracelet. Have this engraved on the bracelet: "Pectus excavatum - metal bar in chest".

While the bar is in place your child cannot have a MRI (Magnetic Resonance Imaging) test.

In an emergency, chest compressions for CPR (resuscitation) can be done. More force may be needed due to the bar. Defibrillation for an abnormal heart rhythm (cardiac arrhythmia) can also be done if needed.

When is the bar removed?

The bar is left in place for 2 to 3 years to support the chest as the child grows. Removal of the bar is done easily as a day surgery procedure.

When should I call the surgeon?

Call your surgeon right away if you notice your child has any of these problems:

- any difficulty breathing
- chest pain, especially with deep breaths
- feels ill or has a fever: a temperature higher than 38.5°C or 101.3°F
- a cough that does not get better
- redness, swelling, bleeding or discharge from the incisions
- pain that does not get better or seems to be getting worse
- any injury to the chest that may have caused the bar to move

For Dr Fitzgerald, call 905-521-2100 ext. 75231.

If you cannot reach the surgeon bring your child to the emergency room at the McMaster Children's Hospital (the McMaster University Medical Centre site of Hamilton Health Sciences). If you are not in the Hamilton area, go to your nearest hospital emergency room.

