



Pectus Excavatum

What is a pectus excavatum?

A pectus excavatum is a depression of the breastbone (sternum) and the lower central portion of the ribs (costal cartilages) (Figure 1).



Figure 1

What causes pectus excavatum?

- A pectus excavatum is caused by an overgrowth of costal cartilage during chest wall development before birth. These cartilages are extra long and push the sternum backward.
- Pectus excavatum is not always noticed at birth. It is usually apparent by 2 - 3 years of age. It can become more severe during later childhood and progress further with pubertal growth.
- It is 4 times more common in boys than girls and occurs more often in families where one member has the abnormality.
- Pectus excavatum is associated with other muscle and bone (musculoskeletal) abnormalities, particularly scoliosis (15% of cases).

Is a pectus excavatum dangerous?

No. Occasionally patients will have complaints of non-specific chest wall pain.

How is a pectus excavatum treated?

- If the pectus excavatum is causing exercise limitations, heart problems, or if the child is concerned about how it looks, it can be repaired by surgery.
- A preoperative evaluation is performed 1-2 weeks before surgery. At this time you will meet with a:
 - nurse practitioner who works with the surgeon;
 - nurse;
 - anesthesiologist;
 - lab technician to have your child's blood drawn.
- General anesthesia is used for the surgery and your child will be in the hospital for 4-6 days following surgery.

How does the surgeon repair it?

There are two types of repair:

- In the "**traditional repair**", an incision is made across the chest centered below the level of the nipples. The chest muscles are raised from the breastbone (sternum) and ribs. The cartilage portion of the ribs next to the breastbone is partially removed. The lining around the cartilage is left in place. This lining will grow new cartilage, which will not be in a depressed position. A wedge of bone is also removed from the breastbone at the point where it is depressed. This allows the

breastbone to be elevated into a normal position. A strut is then placed behind the breastbone to secure it firmly in a forward (anterior) position. The strut is not removed for at least 6 months after surgery. This allows adequate time for the breastbone to heal and the cartilage to grow. The breastbone will then be firmly in place. (Figure 2)



Figure 2

- A **“Nuss” repair** has been recently developed and is often labeled as a “minimally invasive repair”. A C-shaped metal strut is placed behind the breastbone and in front of the heart through an incision on each side of the chest. It is then rotated halfway around to elevate the breastbone and bend the cartilage segments of the ribs. This method may not be suitable for some older adolescents or children with unbalanced deformities.

Will I/my child be “put to sleep” during the surgery?

- A member of the anesthesia department will meet with you and your child before surgery. He or she will take a health history, perform a physical exam, discuss the plan for anesthesia, and answer any of your questions.
- You/your child will be asleep under general anesthesia for this procedure. Vital signs will be fully monitored throughout the surgery. A nurse anesthetist, an anesthesia resident, or an anesthesia attending will be at your/their side throughout the procedure.
- The surgery requires insertion of a breathing tube while you/your child is asleep. Additional “IV” lines and a bladder catheter may be required.

What happens after surgery?

- After surgery, your child will go to the recovery room, and then be transferred to the surgical floor after approximately 1-2 hours.
- Your child may have a small rubber tube (drain) underneath the incision. This will be removed 1-2 days after surgery.
- Your child will be helped to walk the day after surgery.
- Your child can eat/drink if feeling well the day after surgery.
- It is not necessary to remove the stitches. They are under the skin and will dissolve.
- Your child should not return to gym or contact sports until after the postoperative visit with the surgeon. The doctor or nurse practitioner will give you exact instructions.
- Your child will need to see the surgeon 2 weeks after surgery to check how the area is healing.

How will my/my child's pain be managed?

- The Pain Treatment Team will oversee your/your child's pain management. The Pain Team doctors and nurses will visit you/your child every day and are available 24 hours a day.
- There are 2 ways your/your child's pain can be managed: **PCA pump or Epidural catheter.**
- The **PCA pump** (Patient Controlled Analgesia) requires you/your child to push a button on the pump. This sends a dose of the pain medicine into your/your child's IV. There are safety mechanisms to prevent you/your child accidentally getting too much of the pain medicine.

- The **Epidural catheter** (similar to what is used during childbirth) is a continuous infusion of pain medicine through a small catheter in your/your child's back. The catheter may be inserted before the beginning of the surgery while you/your child is well sedated. Because local anesthetic (like numbing medicine at the dentist's) is used, some numbness or weakness may temporarily be noticed after surgery. Occasionally, patients may complain about itching from epidural pain medication.
- For more information, ask a member of your health team for the information sheet on Epidural catheter or PCA pump.

When should I call my child's doctor?

Call if your child has:

- an increase in redness or swelling around the wound;
- drainage or bleeding from the incision;
- a fever of 100.5° or higher;
- severe pain that does not get better with pain medicine;
- shortness of breath.

Numbers to Call

Monday – Friday 8:30am – 5:00pm	Nurses' line (617) 355-7704 Nurse Practitioners' line (617) 355-7716
Evening, Nights, Weekends, and Holidays	Page Operator (617) 355-6369 Ask for the surgeon on-call.

A **Spanish** version of this is available from your provider

Send comments or questions to: Familyed@childrens.harvard.edu
