

Pectus Carinatum

What is Pectus Carinatum?

Pectus carinatum is when the breast bone or sternum and the rib cartilage stick out from your child's chest. It may also be called "pigeon chest". It can be mild, moderate, or severe. It can get worse as your child gets older and goes through growth spurts.

What is the Cause?

This condition is seen more in boys than girls. It is caused by a rapid but abnormal growth of the cartilage that holds the ribs to the breastbone. The cartilage flares out away from the chest and causes the breast bone to stick out. The problem with the cartilage can be on both sides or on one side.

What are the Signs and Symptoms?

Your child may not have any symptoms related to the pectus carinatum. Some children have a hard time with physical activity. Others have some pain in the area of the extra cartilage.

How is it Diagnosed?

- Chest x-ray at first appointment after being seen by physician.
- Chest CT scan or MRI may be done.
- Echo (echocardiogram) may be done to take a close look at how your child's heart is working.
- EKG (electrocardiogram) may be done to see if your child's heart is beating normally.

How is it Treated?

Treatment options include either a pressure brace or surgery.

Pectus Carinatum

Pressure Brace:

A custom fit external brace is an option for patients with mild to moderate pectus carinatum who want to avoid surgery. The patient must wear the brace as recommended in order for it to work. This brace puts pressure directly on the sternum. The brace has front and back compression plates that are anchored to aluminum bars. These bars are bound together by an adjustable strap on each side.



The pressure of the brace may be difficult to handle at first.

If your child feels lightheaded, have him or her sit down. The brace may need to be loosened then gradually tightened. **The brace should be worn over a t-shirt for 14 to 16 hours per day.** Your child will wear the brace for only 2 to 3 hours at a time on the first day.



The wearing time will increase by 2 to 3 more hours each day until your child is wearing the brace for 16 hours a day.

It will take about one week to reach the full 16 hours. The brace is to be worn for a time as instructed by your physician or until your child is done growing taller. You will be taught how to tighten the straps. In the beginning the straps are tightened every 2 to 4 weeks. Patients will need to follow up every 6 weeks to 3 months and then at 6 to 12 month intervals to monitor progress and to take measurements. Measurements are also affected by general growth.



Surgical repair of Pectus Carinatum:

Before surgery you will meet with the surgeon to talk about the risks and benefits of the surgery. Your child will be asleep under general anesthesia for the surgery. On the day of surgery, you will meet the anesthesiologist (the doctor that will help your child sleep during surgery). Your child may be in the hospital for a few days after surgery so the pain can be kept under control.

Pectus Carinatum

How does the surgeon repair it?

- A cut is made across the chest, below the level of the nipples.
- The cartilages that are not normal are removed, leaving behind the lining around the cartilage. This allows the cartilage to re-grow in a new position.
- The breastbone is kept in the right position by a metal bar. This bar will fix and keep the breastbone stable while it is healing.
- Another outpatient surgery to remove the bar will be done in about 8 to 10 months.
- Surgery does not correct the flaring of the lower ribs.

What Happens After Surgery?

After surgery your child will go to recovery. Once your child is awake and stable, they will be moved to the surgical floor.

- Your child may have a small drain under the cut which will be taken out before your child goes home. If there is a large amount of drainage from the drain, your child may go home with a drain. **See JP Drain teaching tool.**
- We will help your child with sitting day 1 after surgery and walking day 2 after surgery.
- We will teach you and your child how to use the Incentive Spirometer; which helps the lungs expand after surgery.
- The team will talk to you about diet, activity, wound care, pain management, and other after surgery care.
- There are activity restrictions while your child is healing and until the bar comes out. These include no contact sports or heavy lifting which could move the bar, or other exercise restrictions explained by Physical Therapy.
- A special shield or chest protector will be given to your child to protect the breastbone while the bar is in place.

Pectus Carinatum

How is Pain Managed?

Your child's pain will be managed with IV (intravenous) medications, a PCA (patient controlled analgesia pump), or an epidural catheter. There is no information to suggest that one works better than the other.

- To use a PCA, your child must be able to push a button on the pump. This sends pain medication into your child's IV. There are safety controls to prevent your child from getting too much medicine.
- An epidural catheter is a constant flow of pain medication through a small catheter in your child's back. The catheter will be put in during surgery while your child is sleeping. This makes the area around the cut numb.
- Pain management tool to guide you through the use of oral pain medicine will be given at discharge along with a wean calendar.

For General Health Information and Resources:

Call or visit the Family Resource Center, a free health information library on the 3rd floor of the hospital. Call 314.454.2350, email at frc@bjc.org, or check out the FREE St. Louis Children's Hospital Kid Care App.



Home Pain Regimen after Pectus Procedure

You child is being discharged with the following medications:

Drug: _____ Dose: _____ When to give: _____

Drug: _____ Dose: _____ When to give: _____

Drug: _____ Dose: _____ When to give: _____

Drug: _____ Dose: _____ When to give: _____

Drug: _____ Dose: _____ When to give: _____

These pain medications are being prescribed by your physician to aid in helping with pain control at home and helping your child return to everyday activities. We expect your child to be back to activities of daily living two weeks after discharge. Please follow the guidelines on weaning your child off these medications for the best possible Post-Operative experience. Your child's pain will continue to get better everyday. His/her pain medication requirement will be a little less each day. Please note these medications may not resolve the pain, but will aid in decreasing his/her pain. Tylenol or Ibuprofen should be used in exchange for oxycodone as your child is farther from his/her surgery date. Medications take about 25-40 minutes to start working. Please keep that in mind when treating pain. Please note that narcotic pain medication refills cannot be dispensed over the phone or faxed to pharmacy. In the rare instance, your child requires additional pain medication; he/she will need to be evaluated by a pediatric surgeon or nurse practitioner.

Common medications on discharge: (please note all these medications may have significant side effects in your child, which may inhibit the surgery team's ability to use them).

Oxycodone (other names: Roxicodone) is a narcotic pain medication used to relieve significant pain and is a short acting pain medication. It can be administered every 4-6 hours as needed. You will be given a wean schedule to appropriately transition off this medication.

Cyclobenzaprine (other names: Flexeril) is a skeletal muscle relaxant used to treat muscle spasms. It can be administered every 8 hours as needed for muscle spasms. Your child may not require this medication.

Acetaminophen (other names: Tylenol): is a Non-Narcotic pain medication in treatment of mild to moderate pain. It can be administered every 4-6 hours as needed for pain. This can be administered along with the oxycodone and ibuprofen.

Ibuprofen (other names: Advil, Motrin) is a nonsteroidal anti-inflammatory drug used in treatment of mild to moderate pain. It can be administered every 6-8 hours as needed for pain. This can be administered with oxycodone, Tylenol and ibuprofen.

