

Pectus Excavatum

What is Pectus Excavatum?

It is a pushing in of the breastbone (sternum) and the middle section of the ribs (costal cartilages). When the breastbone is pushed in, the belly often sticks out or looks like a potbelly. Lower flaring of the ribs is often seen. The pectus can involve one or both sides of the breastbone. This means that one side can look more pushed in than the other.

The amount that the breastbone pushes in can range from mild (slight) to severe (deep). If it is severe, the pectus can push against the heart and lungs which can affect how they work when your child is very active. It is never life threatening.

The pectus can get worse with age and when a child has his or her growth spurt. It should stop after your child's bones are finished growing.

What is the Cause?

- A pectus excavatum happens when there is too much growth of costal cartilage while the chest wall is forming.
- It does tend to happen in families
- It is seen in some patients with connective tissue disorders, like Marfan's syndrome and Ehlers-Danlos syndrome.
- Some patients with pectus excavatum also have scoliosis (curvature of the spine).
- Some patients have a heart condition called mitral valve prolapse.

What are the Signs and Symptoms?

Some patients have no symptoms. Symptoms differ depending on how far the breastbone pushes in. Some children have mild respiratory symptoms while other children have chest pain, trouble breathing when they are active, and trouble with exercise.

How is it Diagnosed?

- Chest x-ray at first appointment after being seen by physician.
- Chest CT scan or MRI may be done to see the Haller index, which tells us how deep the breastbone pushes in.

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- Pulmonary function tests (PFT) may be done to tell us if the pectus is causing your child to have any breathing problems related to the pectus.
- 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 is based on how severe the pectus is. If your child has any heart problems or trouble with exercise, surgery may be done to correct a pectus excavatum. A Ravitch procedure is done by a pediatric surgeon.

Surgical repair of Pectus Excavatum:

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.

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.**

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- 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.

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: _____

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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.

