

ROCKY MOUNTAIN PEDIATRIC SURGERY

Steven S. Rothenberg, MD

Saundra M. Kay, MD

Kristin E. Shipman, MD

Bethany J. Slater, MD

Alison Covak, PA-C

Barbara Jones, FNP-C

PediatricSurgeon.com

RockyMountainHospitalForChildren.com

Pectus Excavatum

What is Pectus Excavatum?

Pectus Excavatum (PE) is a depression of the breastbone (sternum) and ribs. It is the most common chest-wall deformity. The severity of the depression ranges from mild to severe. The deformity is sometimes referred to as “sunken” or “funnel” chest. Due to the chest depression, the abdomen may also seem to protrude. PE is caused by the abnormal growth of cartilage where the ribs connect to the sternum. It is unknown what exactly causes the abnormal cartilage growth. PE can run in families and thus may have a genetic component. PE occurs in an estimated 1 in 300-400 individuals and is more common in males, with a male-to-female ratio of 3:1. PE has been associated with connective tissue disorders, such as Marfan syndrome or Ehlers Danlos syndrome. The condition can be noticed at birth in about 1/3 of patients. The chest depression and onset of symptoms usually become more noticeable in early teenage years with a rapid growth spurt.

Symptoms:

Patients usually present to their primary care provider with concern for the overall appearance of their chest and are then referred to a pediatric surgeon. This cosmetic concern can affect participation in sports, social activities, and daily life. It can lead to self-esteem issues as well as physiological concerns. Some patients may also experience some symptoms, such as:

- Back Pain
- Shortness of Breath
- Exercise Intolerance
- Chest pain

The last 3 symptoms can be the result of compression and displacement of the heart and lung compression. However, the correlation between PE and these symptoms has not been proven well. There is also an association of scoliosis (curvature of the spine) and PE in about 15% of patients.

Diagnosis:

Diagnosis of Pectus Excavatum can be made after a complete health history and physical examination. Some patients may have undergone a chest x-ray during their initial evaluation with their PCP. After the diagnosis is made, we will order a few tests to determine the effects on the heart and lungs. These tests include:

- A chest Computed Tomography (CT) scan is performed to look at the anatomy of the chest, heart, and lungs. The radiologist will also take measurements of the chest and determine the Haller index. The Haller index is ratio of the lateral diameter of the chest to the distance between the sternum and spine at the most severe area of the PE. This number indicates the severity of the PE.
- Pulmonary Function Tests are obtained to determine if the PE is causing any limitations for breathing
- An Echocardiogram will be performed to look at the structure and function of the heart.

Our office will work with you and your family to determine a day that would work best to have all the tests performed on the same day and thus making the process easier.

Rocky Mountain Professional Plaza

2055 High Street, Suite 370

Denver, CO 80205

Office 303.839.6001

Fax 303.839.6033



ROCKY MOUNTAIN
HOSPITAL for CHILDREN

A Service of Presbyterian/St. Luke's

Health
ONE



Treatment:

The most common indication for operative repair of Pectus Excavatum is to achieve anatomical correction of this congenital chest wall deformity. This is particularly important in young teenagers where the appearance of the chest can result in significant problems related to body image and self-esteem. Other indications include exercise and physical activity limitations, evidence of cardiac and/or pulmonary dysfunctions, chest pain, and/or psychological distress.

The operation is easier and the recover time faster in children who are preadolescent as their bones and cartilage are more flexible. However, there has been an increase in the number of teenagers undergoing the procedure and results are equally good in older patients up to their mid-twenties.

Surgical intervention:

The surgical correction of Pectus Excavatum is usually done using the Nuss Bar technique. This technique is a minimally invasive surgery (MIS), meaning the surgery is done using small incisions and a small camera to see inside the chest. The surgery is performed under general anesthesia. There are two incisions about 2 inches long, one on each side of the chest. These incisions allow for the placement of a curved steel bar under the sternum. The bar, which is individually curved for each patient, is used to instantly correct the Pectus Excavatum. It is then secured to the ribs with a small steel, grooved plate on one side and sutures on the other side to help stabilize and fix the bar to the rib. The incisions are then closed with absorbable sutures and surgical glue over the skin. The bar is not visible from the outside and stays in place for a minimum of two years.

After surgery:

The immediate recovery time in the hospital is 3-5 days, mainly for postoperative pain management, encouragement to breathe deeply, assistance with movement (so as not to dislodge the bar), and patient/parent education. After discharge, the patient is expected to slowly resume normal, but restricted, activity. Most children are able to return to school in one to two weeks, with exercise restrictions. These activity restrictions are necessary to help scar tissue form around the bar and hold it in place. If scar tissue is not adequately formed prior to strenuous activities the bar can move and a repeat surgery is needed.

Bar Removal:

The bar can be removed 2 years after the repair of the Pectus Excavatum in an outpatient setting. Patients are not restricted from any activities, except for 1 or 2 days after this minor procedure.

Disclaimer: *Your child's condition is unique. The information contained on this web site is not intended to substitute for advice from a doctor or nurse. If you are unsure about any aspect of your patient's care, please contact us at 303-839-6001, or talk to your pediatrician.*