MEET THE Team

We understand that no surgery is simple. That is why patients need surgeons who are pediatric-trained and experienced in treating a wide range of conditions. Our team of pediatric general surgeons includes:

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SURGERY Update

Surgery Update is a newsletter from Children’s Physician Group—Pediatric Surgery intended to keep you informed regarding the latest in pediatric general surgery.

In this issue
• Pectus excavatum
• Program news and announcements

Call 404-785-6950 (Scottish Rite) or 404-785-6895 (Egleston) to make a referral or to discuss potential surgical treatments for your patients.

Visit choa.org/CPGSurgery for more information.

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PACTUS excavatum

Definition

Pectus excavatum is a depression deformity of the anterior chest wall sometimes referred to as a “funnel chest” that results from deformity of the cartilage of the lower rib cage that push the sternum in a posterior direction. It contrasts with the less common protruding chest wall deformity, known as pectus carinatum, where the costal cartilages bend anteriorly, creating the appearance of a “pigeon chest.” The incidence of excavatum to carinatum is nearly 10 to 1 ratio. The condition occurs three times as often in males.

Etiology

The actual cause of pectus excavatum is not clearly known. It seems to have a genetic component since it occasionally runs in families. The condition relates to some intrinsic problem in the chest cartilage that results in their bowed contour. Other musculoskeletal or connective tissue disorders associated with pectus excavatum include scoliosis or Marfan’s syndrome.

Pathophysiology

The effects of the depression deformity of the anterior chest wall relate to the decreased space between the sternum and the spine when the sternum is pushed posteriorly. This causes a reduction of chest volume with resultant restrictive or obstructive pattern of pulmonary function tests. Also, the heart position becomes deviated to the left and the sternum compresses the right atrium, thus potentially reducing cardiac output by decreasing stroke volume.

Clinical Presentation

Many children with pectus excavatum present in the first year of life. However, the degree of chest wall depression tends to worsen during or shortly after the pubertal growth spurt, so the obstructive pattern is often seen until the early teen years. Some children remain asymptomatic, but the common presenting complaints include exercise intolerance, breathing problems or chest pains. Exercise intolerance manifests itself as the child being unable to keep up with a teammate during sport, or become winded quickly. Sometimes children with pectus excavatum are referred to the pediatric surgeon from a pulmonologist because of difficulty to manage reactive airways disease. Chest pains are often described as parasternal, sharp, intense and brief. Many times they do not have an identifiable trigger.

In addition to the physiologic complaints enumerated above, many teens suffer profound psychological effects from pectus deformities. At a time when their self-image is often already fragile, teens can become withdrawn or depressed and avoid any situation where their chest might be exposed, such as swimming, because of these conditions.

Work up

In addition to a thorough history and physical, several studies can be done to quantify impairment related to pectus excavatum. Anatomic severity can be determined with the Holver index. The index is calculated by dividing the transverse diameter of the chest by the anteroposterior diameter as seen on chest CT scan. A ratio greater than 2.3 is considered severe. The CT scan also helps by demonstrating the degree of tilt on the sternum in the axial image that can be a bearing on which operative technique for correction is most appropriate.

Pulmonary function tests and an echocardiogram can help quantify pulmonary physiology. The most common finding on pulmonary function tests in patients with significant pectus excavatum deformity is a restrictive pattern, but an obstructive pattern is also sometimes seen. The echo can give some assessment of cardiac output and the presence of right atrial compression, and also checks for valvular competency as well as aortic root diameter. Patients with Marfan’s syndrome can have aortic root enlargement.

Treatment

The mainstay of treatment for significant pectus deformities is surgical. Two main techniques are used. The first, known as the Nuss, or minimally invasive technique, uses a titanium bar placed substernally through two small lateral chest wall incisions to elevate the sternum. The forces exerted by the bar on the sternum and costal cartilages causes them to remodel their shape so that when the bar is subsequently removed in a second operation two years later, the chest wall contour has corrected itself. In many centers, the Nuss procedure is the more commonly used technique.

However, in some instances, the open or modified florich technique may be more appropriate. In this approach, a three- to four-centimeter incision is created vertically over the lower sternum from just below the nipple line to the xyphoid process.

The lower costal cartilages attached to the sternum on each side are removed while preserving their perichondrial sheaths. A wedge, transverse osteotomy or split of the sternum then allows for anterior repositioning of the perichondrium to correct the deformity. Often, a subxiphoid bar such as the one used for the Nuss procedure, is not necessary with the open technique. Because the perichondrial sheaths are preserved, the cartilage grows back, but in a more normal contour. This technique is better suited for very deep, broad defects that would require removal of two subxial bars with the Nuss technique or in asymmetrical defects where the sternum is tilted, because elevation of a tilted sternum with the subxial bar in the Nuss technique often leads to an asymmetrical, unaesthetic cosmetic result.

Visit www.biometmicrofixation.com to learn more details about the pectus bar.

Contact Amna Bhatia at amna.bhatia@choa.org if you would like to learn more about the trip.

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Pectus excavatum

As of June 1, 2015, Jean Christian will serve as Practice Manager for the Scottish Rite and Egleston pediatric surgery groups. Christian started at Children's in 1999 as a Practice Manager for Scottish Rite. She serves on the American Pediatric Surgical Association (APSSA) board and has been treasurer of APSSA since 2002.

Children's pediatric surgery team volunteers in Peru

In March 2015, a team of pediatric doctors and nurses led by Children’s surgeon Dr. Amna Bhatia traveled to Yantalo, Peru, on a humanitarian medical mission supported by Children’s. The Yantalo Clinic is a nonprofit hospital that provides care to women and children in the Northern Highlands of Peru. After 10 years of planning and construction, the Yantalo Clinic opened its doors, and the first operations in the new institution were performed by a team of dedicated doctors and nurses from Children’s and Emory University. During their time in Peru, the team evaluated 24 preselected patients aged 6 months to 14 years. Children traveled up to 20 hours by bus up to 45 hours on foot to be seen. Ultimately, 14 patients underwent successful surgical interventions; these ranged from simple inguinal hernia repairs to the anastomosis of an anorectal anomaly.

The team also made educational outreach available to local medical residents and medical students from Lima, Peru. The local trainees observed surgeries, participated in lectures given by the mission team and helped with postoperative inpatient care. Overall, the team project was a tremendous success.

Contact Amna Bhatia at amna.bhatia@choa.org if you would like to learn more about the trip.

Services provided by Children’s Pediatric Group—Pediatric Surgery provide comprehensive general and thoracic pediatric surgical care for children and adolescents throughout Georgia and the Southeast. Our offices are located at:

Main offices

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Atlanta, GA 30345
P: 404-785-8787, F: 404-785-8788
Dr. Bhatia, Clifton, Durham, Inman, Meisel, Parker, Ravid, Santoro and Wolffkin

Children’s Medical Office Building
5400 Morrin Road, Suite 570
Atlanta, GA 30342
P: 404-785-8787, F: 404-785-8788
Dr. Bhatia, Buehler, Glasson, Girma and Raschbaum

Outpatient clinics

Children’s at Cobb (Marietta)
P: 404-785-8787, F: 404-785-8788
Dr. Clifton

Children’s at Fayette (Fayetteville)
P: 404-785-8787, F: 404-785-8788
Dr. Meisel

Children’s at Forsyth (Cumming)
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Dr. Bhatia and Raschbaum

Children’s at Old Milton ParkW (Alpharetta)
P: 404-785-8787, F: 404-785-8788
Dr. Buey

Children’s at Satellite Boulevard (Duluth)
P: 404-785-8787, F: 404-785-8788
Dr. Bhatia, Meisel, Santoro and Sartore

Atlhens Clinic (Athens)
P: 404-785-8787, F: 404-785-8788
Dr. Clifton

Columbus Clinic (Columbus)
P: 404-785-8787, F: 404-785-8788
Dr. Ravid and Wolfkin

Surgical locations

We perform surgeries at Egleston hospital, Scottish Rite hospital, Children’s at Meridian Mark Outpatient Surgery Center and Children’s at Satellite Boulevard Outpatient Surgery Center.

Contact us

Children’s Physicial Group—Pediatric Surgery