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Central California Pediatrics

Specialty information for physicians who treat children and expectant mothers.



Pectus Excavatum: What to Know, Treatment Options and When to Refer

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Chest wall deformities are structural abnormalities of the thoracic cavity, with pectus excavatum (PE) being the most common type. Occurring in approximately 2.6% of children, PE accounts for 80–90% of all chest wall deformities. It is defined by a concave or sunken appearance of the chest, caused by a depression of the sternum and surrounding cartilage.

While the exact cause of PE remains unknown, current theories suggest it may result from overgrowth of costal cartilages that push the sternum inward. Another hypothesis points to abnormalities in cartilage composition, which could lead to increased flexibility of the chest wall. A thorough family history should be taken during evaluation, as chest wall deformities can present in familial patterns.

Clinical Presentation

Pectus excavatum often becomes noticeable during early childhood and may significantly worsen during puberty, particularly during periods of rapid growth. The clinical presentation varies but commonly includes:

- Shortness of breath
- Decreased exercise tolerance
- Compression of the right ventricle
- Mitral valve prolapse on echocardiogram
- Decreased pulmonary function, such as reduced forced expiratory volume in one second (FEV1) and forced vital capacity (FVC), though total lung capacity is typically unaffected

Beyond physiological symptoms, a significant proportion of patients experience psychosocial challenges, including body image concerns and bullying, particularly during adolescence—a sensitive time in emotional development. These psychological impacts often contribute as strongly to a patient's desire for treatment as any physical symptoms.

Initial Evaluations

For primary care providers, the initial evaluation of pectus excavatum is primarily based on physical examination and patient history. Routine imaging, such as chest X-rays, is not typically required, as they may not clearly demonstrate the deformity.

The most critical part of early management is determining whether the presenting symptoms are directly related to PE or possibly caused by other underlying conditions. For example, complaints of shortness of breath should prompt a careful assessment to rule out alternative pulmonary or cardiac causes.

When to Refer

Referral to Valley Children's is appropriate when pectus excavatum is suspected or diagnosed. Ideally, patients should be referred around 12 years of age, which aligns with early puberty and allows for timely intervention. However, families with younger children may be referred earlier if they seek additional information or are experiencing distress about the appearance of the deformity.



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At Valley Children's, we have a team dedicated to chest wall deformities. At the initial consultation, the team will conduct a thorough evaluation, including physical examination, photographs and baseline measurements. If surgery is under consideration, further work-up may include CT imaging, echocardiogram, and pulmonary function testing, but these are not routinely ordered unless the patient is a surgical candidate.

Treatment Options

The most common surgical procedure for PE is the thoracoscopic Nuss procedure, which involves placing a curved metal bar behind the sternum to elevate it into a more natural position. The bar typically remains in place for 2-3 years. At Valley Children's, we use state-of-the-art equipment, including intraoperative cryoablation of the intercostal nerves, which significantly improves post-operative pain control and reduces reliance on narcotic medications.

For patients who are either too young for surgery, have milder deformities, or wish to avoid operative intervention, the Vacuum Bell device may be an option. This non-invasive therapy uses a suction cup to create negative pressure on the chest wall, gradually pulling the sternum outward. It is most effective in younger, more flexible patients and typically requires months to years of daily use.

By recognizing pectus excavatum early and referring appropriately, providers can ensure children and families receive timely, informed care that addresses both physical and emotional well-being.

Refer a patient by calling the Valley Children's Access Center at 866-353-KIDS (5437) or via eReferral or CareLink.

Medical Staff News

The following pediatric specialists recently joined Valley Children's:

Cardiology

Anton Mandrov, MD

Child Advocacy

Aziz Komal, MD

Infectious Disease

Samir Midani, MD

Primary Care

Megan Hall, DO

Anne VanGarsse, MD

Sleep Medicine

Jacqueline Angles, MD

Urology

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