

About PC

Pectus Carinatum



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Pectus Carinatum was first reported in medical literature in the 19th Century by Epstein (1882).

Incidence ranges from 1:1500 to as low as 1:400 live births

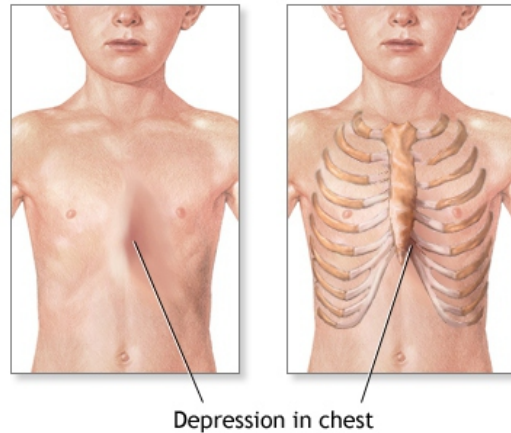
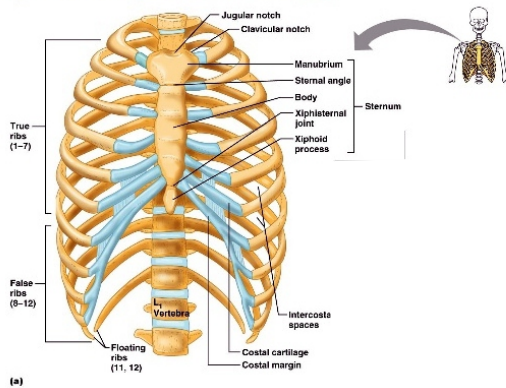
Male: Female ratio is 4:1

Strikes males usually between the ages of 11-14 years old

Other names for Pectus Carinatum: Pigeon Chest, Chicken Breast, Sternal Kyphosis.

Causes of PC: overgrowth of the costal cartilage (under growth of the ribs).

Bony Thorax (Thoracic Cage)



Connective tissue disease also plays a role in PC formation. There is a genetic link in 25-40% of identified cases of PC. There are more than 76 identified syndromes that can have PC as a part of their conditions. Some more frequently associated syndromes include: Scoliosis, Kyphosis, Marfan's Syndrome, Ehlers-Danlos Syndrome, Noonans Syndrome, Osteogenesis Imperfecta and Asthma.

Primary types of PC include: **Chondrogladiolar Fig. 1** (protrusion of the middle and lower sternum) and **Chondromanubrial Fig. 2** (protrusion of the manubrium and upper sternum).



Fig. 1

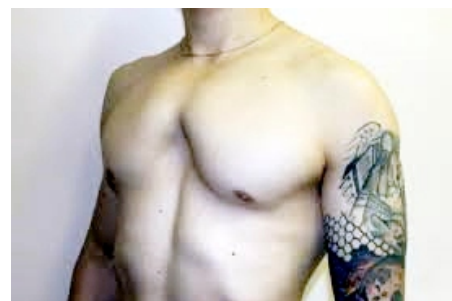


Fig. 2

Common symptoms include: exercise intolerance, chest pain, chest wall tenderness, shortness of breath, palpitations, wheezing, scoliosis, asymmetrical appearance to the chest along the sternum, kyphotic body position (hunching forward to mask the deformity).

Psychological effects of PC include embarrassment / shame, lack of self esteem, timidity, maladaptive social behavior, inhibit establishment of identity and new relationships with the opposite sex. Psychosocial suffering may be greater in children with Pectus Carinatum than in children with Pectus Excavatum because Pectus Carinatum is more noticeable under clothing. Studies report children surveyed admit to being teased “ often to sometimes” by peers. Research further shows there is an increase in psychosocial difficulty with increased age.

BRACING Pectus Carinatum

Prescription requirements: HCFA law 21.CFR 801.109 requires a physician's prescription for the sale of this orthotic device.

Carbon Based has designed a non-invasive method to treat PC. By applying a gentle compressive force to flatten the protrusion, the patient is spared the ordeals of thoracic surgery.

Composed of a gel chest pad and foam back pads, connected by a single carbon fiber band, the P4COft© and P4COsa© orthoses are easily donned and adjusted. By applying a consistent compressive force to the chest wall over a period of time, a significant flattening of the chest wall prominence occurs.

The low profile and fixed tension P4COft© and the patient adjustable P4COsa© Pectus Brace Orthoses are more comfortable to wear and sleep in than other devices. Recommended for all age groups, they are especially suited for younger age groups (those under 10yrs old) with mild to severe deformity. Both the P4COft© and the P4COsa© are modular in design and have adjustability for growth and corrective sternal pressure.

ORTHOTIC SUCCESS REQUIRES:

- Wearing the P4CO 18-20 hours in a 24 hour period (or as prescribed by your physician).
- Maintaining proper tensioning of the sternal pad.
- Taking care of your skin and monitor its condition.
- Cleaning your P4CO regularly.
- Making certain your P4CO is applied correctly each time it is worn.
- Scheduling follow-up appointments with your Orthotist at regular intervals (maximum of 3 months between follow-ups)
- Calling your Orthotist with any questions or concerns so time out of the P4CO is kept to a minimum.

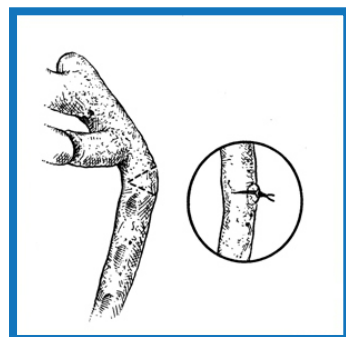
Caution must be exercised when utilizing compression bracing to correct Pectus Carinatum. As evaluated in the research article [Overcorrection during treatment of Pectus Deformities with DCC \(Dynamic Chest Compression\) Orthoses: experience in 17 cases](#) published in International Orthopaedics in 2006, prolonged compression bracing beyond the point of correction can lead to the formation of Pectus Excavatum (a depression of the chest wall). Careful monitoring of deformity correction must be maintained during orthotic treatment. Once satisfactory correction of the PC has occurred, the patient should be placed in the “Maintenance” phase of orthotic treatment. This phase of treatment utilizes the orthosis part-time, either all day or all night. The patient is monitored by the attending physician and Orthotist to ensure correction is maintained during this period.

In addition, it has been shown that over tightening of the ratchet style Pectus Carinatum Orthosis results in excessive rib compression which if not corrected, can cause adverse changes to the rib cage. This is NOT A CONCERN with the P4CO line of Orthoses. Corrective pressure occurs directly over the Pectus prominence and a marker is placed by the Orthotist on the Axilla Strap of the P4CO. This marker designates the correct strap tension needed to hold the orthosis on the body.

A Word About Surgery

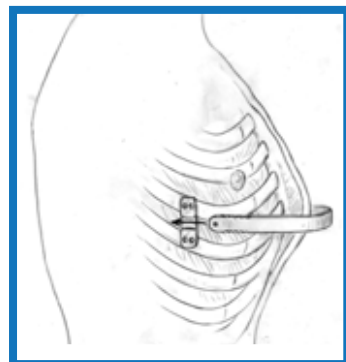
Surgery had been the accepted form of treatment for PC until Dr. Sindney Haje developed the Dynamic Chest Compression Orthosis in 1977 in Brazil. Please visit: www.carbonbasedllc.com/news/ to read more about this incredibly dedicated physician.

The most common surgical procedure to correct Pectus Carinatum is the Ravitz Procedure.



This procedure involves wedging or cutting away the costal cartilage from each side of the sternum and making the sternum lie flat.

Stabilization bars may be used to help the chest maintain its shape during healing and recovery.



As with all surgical procedures there are risks. Risks associated with PC surgery include hemorrhage, infection, pleural effusion (fluid build up around the lungs), pneumothorax (A pneumothorax is an abnormal collection of air in the pleural space that causes an uncoupling of the lung from the chest wall), keloid scarring and pain. There may also be the need for future surgical correction due to an unacceptable cosmetic result from prior surgery.