



History

- Sex: male
- Birthday: 42/03/06
- Age: 52 y/o

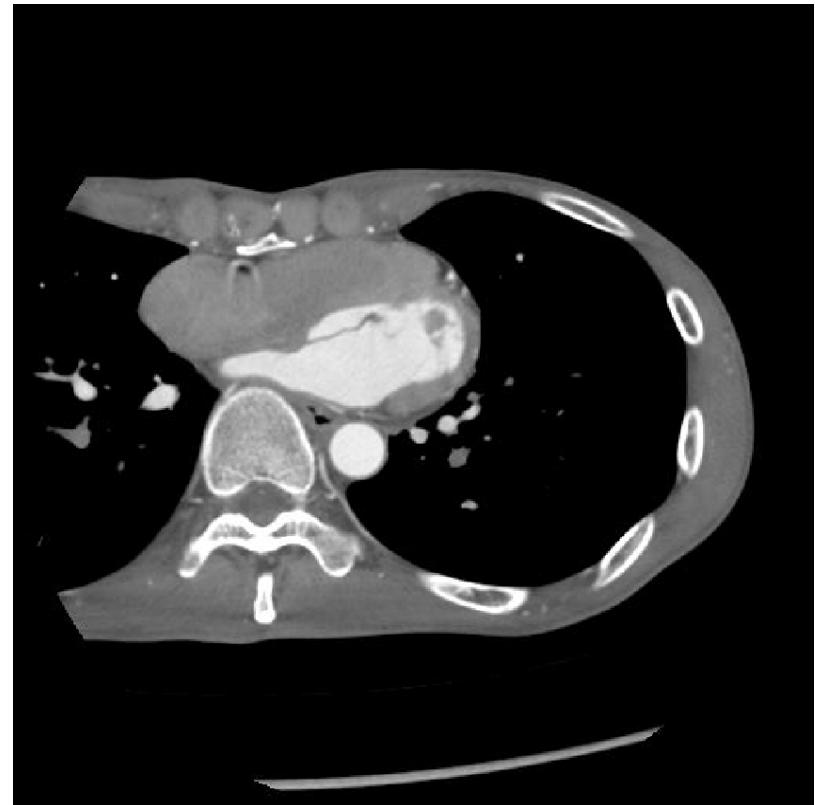
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- The 52 y/o male had history of 1) MVP
2) Pectus excavatum for 20 years. In recent 1-2 years, he suffered from chest tightness and cold sensation at lower extremity. So he came to OPD for help. PE revealed BP and HR in normal range, clear breathing sound, HS: systolic click, apex, no lower leg edema. Cardiac sonography revealed MVP without MR.

Image

- Funnel chest deformity with inward depression of lower sternum and mild heart compression, compatible with pectus excavatum.



- Axial view of the chest shows: the sternum is depressed with evident heart compression. At the heart level the CT axial image shows the transverse diameter is about 26 cm and the AP diameter is about 3.4 cm, The pectus index is 7.65.







Discussion



Hx and Clinical presentation

- Pectus excavatum, also known as **sunken chest**, is a congenital chest wall deformity in which several ribs and the sternum **grow abnormally**, producing a concave, or caved-in, appearance to the anterior chest wall.

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- most patients with pectus excavatum are **asymptomatic** from a functional standpoint
 - **cardiopulmonary impairment** caused by lung compression and cardiac displacement that results from the caved-in chest.

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- mitral valve prolapse has been reported in 20-60% of cases.
 - chest and back pain
 - scoliosis

Indications for treatment


- patients presenting with pectus as well as with **cardiopulmonary impairment**.
- achieve anatomical correction of this congenital **chest wall deformity**
- evidence of cardiac and/or pulmonary dysfunction
- chest pain,
- psychological distress,
- exercise and physical activity limitations
- potential future need for sternotomy (open-heart surgery).

Lab Studies

- No specific laboratory study is necessary in the workup of patients with pectus excavatum.

Imaging Studies


- Obtain baseline 2-view chest radiographs (anteroposterior and lateral views) in all patients.
- associated intrathoracic pathology, severity of the lung compression, and mediastinal displacement.
- The degree of posterior displacement of the sternum,
- possible associated scoliosis


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- Chest CT scanning is useful in determining the CT index, which is derived by dividing the transverse chest diameter by the anteroposterior diameter.
 - An index above 3.2 has been correlated with a severe deformity requiring surgery.

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- pulmonary function test (PFT).
 - Echocardiography

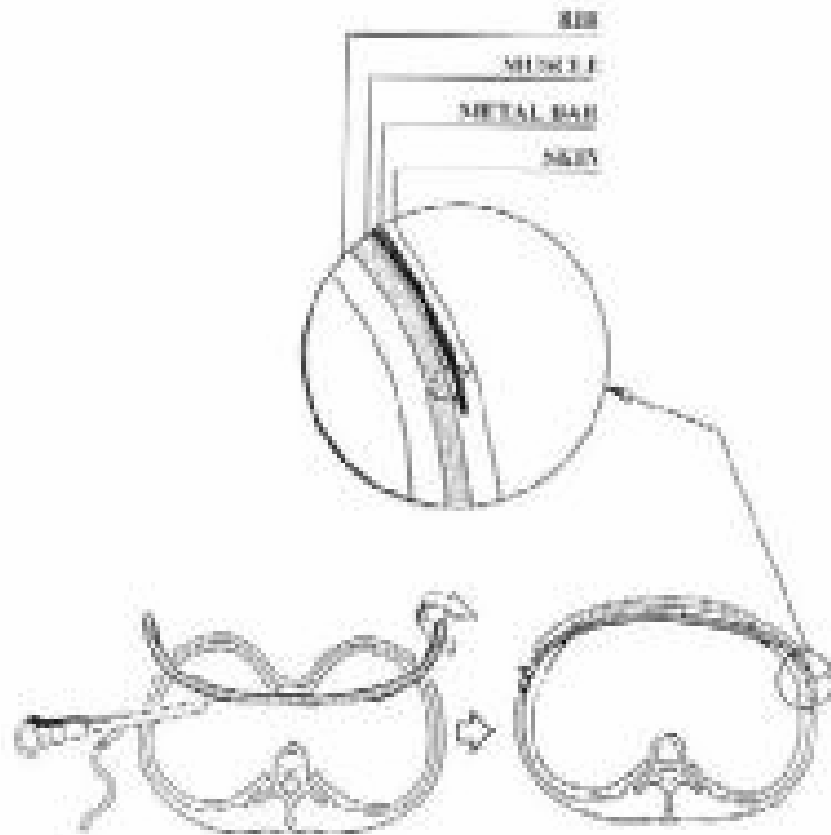
Treatment

- **Medical Care:**
- Exercise
- Orthotopics

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- **Surgical care:**
 - open Ravitch technique for repair of pectus excavatum
 - open operative technique rarely used today, the so-called "sternal turn-over operation"

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- In 1987, during the early stages of laparoscopic and minimally invasive surgery, the first **minimally invasive operation** for the correction of pectus excavatum was performed.


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- **Minimally invasive surgery for repair of pectus excavatum :**
 - Nuss technique









- **Results and complications of minimally invasive repair of pectus excavatum :**

- To date, only 2 large series have been reported that examine complications and outcomes of this new technique.
- with excellent and good results reported at 93% and 96%, respectively.
- However, the only multi-institutional study, which reviewed 251 cases of MIRPE, demonstrated a significant rate of complications (overall incidence of complications was almost 20%)

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- By far, the most common complication requiring reoperation was **displacement of the retrosternal stainless steel support bar** (initially reported to occur in **9.5%** of all patients).
 - Since the introduction of thoracoscopy and the use of lateral stabilizers, as well as the use of the third point of fixation technique, the occurrence of bar displacement has become quite unlikely, with an estimated incidence of less than **2.5%**.

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- **Positives and negatives of minimally invasive repair of pectus excavatum**
 - The principal advantages of this new technique are based on the fact that incising the anterior chest wall, raising the pectoralis muscle flaps, resecting the rib cartilages, and performing a sternal osteotomy are not needed.

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- much shorter operating time,
 - minimal blood loss,
 - and early return to full activity because the stability and strength of the chest wall is not compromised.

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- relatively high rate of complications was reported when many different surgeons performed the operation.
 - The poor results likely occurred early in the reported series because the bar was too soft, was removed too soon, or was not stabilized adequately

Prognosis

- The prognosis of pectus excavatum, with treatment, is excellent.
- Patients with mild pectus excavatum who do not undergo operative correction also have an excellent prognosis.
- Patients with moderate-to-severe pectus excavatum may experience problems related to cardiopulmonary impairment, decreased exercise tolerance, decreased stamina.
- No reports of mortality associated with the condition known as pectus excavatum exist.

