

Chest Wall Deformities

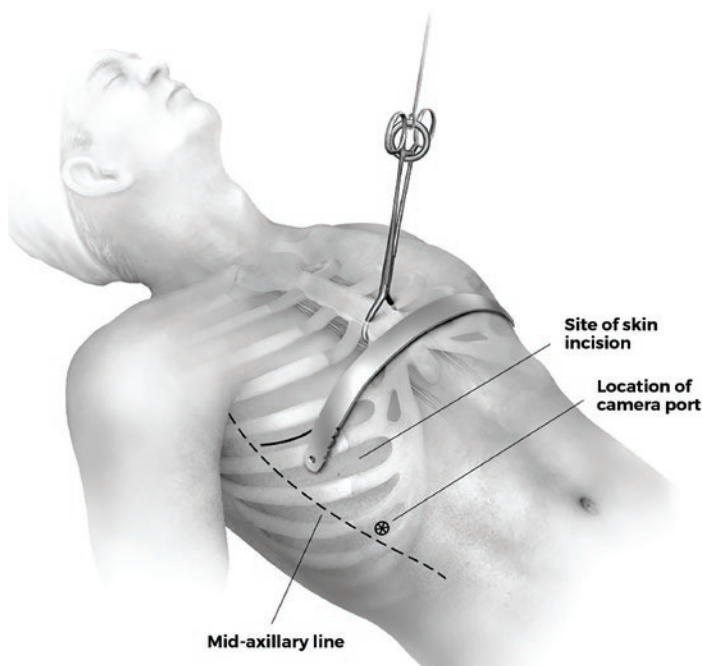
When Should You Be Concerned?

Chest wall deformities are structural abnormalities of the chest that range from mild (no symptoms) to severe (where cardiovascular and respiratory impairment is present). These defects may be apparent soon after birth, or may develop later in childhood during the growth spurt. Senior Consultant Cardiothoracic Surgeon, Dato' Seri Dr Jeswant Dillon, explains more about this condition and the treatment options available.

There are two main types of chest wall deformities – Pectus Carinatum (PC) and Pectus Excavatum (PE). **PC**, also known as 'pigeon chest', is a rare deformity that causes the breastbone to push outward from the chest. The cartilage grows irregularly, creating unequal growth in the areas where the ribs connect to the sternum.

PE is a progressive deformity that causes several ribs and the sternum (breastbone) to grow abnormally in an inward direction, which gives the chest wall a sunken appearance. This is why it is commonly known as "sunken chest" or "funnel chest". It occurs in about one in 1,000 births and accounts for approximately 90% of congenital chest wall deformities.

During growth spurts the deformity can worsen and cause the depressed anterior chest wall to start putting pressure on the heart and lungs. This could laterally displace and compress the heart, causing cardiovascular impairment. Beyond that, the depression in the chest can compress the lungs and also lead to decreased flexibility of the chest wall. As a result, total respiratory function is restricted.



MIRPE was only introduced less than 25 years ago, yet in experienced hands, this procedure saves the lives of many patients, improves their overall organ functions and creates outstanding cosmetic results.

How do you diagnose PE?

Parents of children with obvious but uncorrected PE are encouraged to get a doctor's evaluation. Early evaluation is recommended to better plan the surgery time during the growth spurt, between ages 11 and 14 years before bones and cartilages mature.

For patients with less noticeable deformities but still experience worrying symptoms in their heart or lungs, doctors will use chest X-rays or CT-scans to take a look at the internal structures of the sternum, bone and cartilage. Further tests such as pulmonary (lung) function tests, electrocardiography (ECG) and echocardiogram may also be done to assess the lung and cardiovascular functions.

People with PE may experience lower exercise tolerance, tiredness, shortness of breath, chest pain, back pain, arrhythmia (irregular heartbeat) and recurrent respiratory infections. Besides its clinical effects, the condition may also have a significant psychological impact on PE patients. Poor self-esteem and social withdrawal are quite common among those with PE due to their unusual chest appearance.

“**IJN first introduced the MIRPE procedure in Malaysia in 2008 and since then around 100 patients have benefited from this treatment.**”

Dato' Seri Dr Jeswant Dillon

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Senior Consultant Cardiothoracic Surgeon



What are the Treatment Options?

Before the late 90s, PE patients would have to be treated with the **Ravitch method**, which involved breaking the sternum and raising the pectoralis muscle flaps. This invasive surgery put patients at high risk of blood loss and post-operative pain.

However, in 1997, the Nuss approach, more commonly known as **Minimally Invasive Repair of Pectus Excavatum (MIRPE)** was pioneered by Dr Donald Nuss. The procedure involves making two small cuts (keyholes) on either side of the chest to insert a customised stainless steel bracing bar into the chest cavity to brace and remodel the anterior chest wall. This technique minimises the surgical risks, blood loss and post-operative pain.

The bar is left inside the chest for two to three years in children and three to five years in adults to mould the rib and sternum into the usual curved shape of a chest wall, before it is removed in a simple minor surgical procedure.

The potential advantages of MIRPE are shorter operating times, smaller incisions, shorter hospital stay, excellent long-term cosmetic results and faster return to daily activities. Patients may also resume most activities within two weeks and competitive sports after three months after their surgery.