

# Diaphragmatic hernia

## What is a diaphragmatic hernia?

Diaphragm is the muscle that separates the chest cavity from the abdominal cavity. A defect in the diaphragm muscle that usually occurs before birth as the foetus is forming in the mother's uterus. With a diaphragmatic hernia some of the organs normally present in the abdomen move up into the chest cavity. There are two types of diaphragmatic hernia: Bochdalek hernia: In this type of hernia stomach and the intestines move up into the chest cavity through an opening on the left side of the diaphragm called the Bochdalek foramen. Morgagni hernia: In this type of hernia liver and the intestines move up into the chest cavity through an opening in the central of the diaphragm called Morgagni foramen.

## What causes a diaphragmatic hernia?

As a fetus is growing in its mother's uterus the diaphragm muscle and the digestive organs are developing and maturing. When a part of the diaphragm, either towards its centre or its periphery fails to develop properly a diaphragmatic hernia ensues. The precise reason why this happens is not known. It is thought that multiple genes from both parents, as well as a number of environmental factors that we don't yet fully understand, contribute to diaphragmatic hernia. Sometimes as a result of an accident or injury to the chest with a sharp object the diaphragm gets damaged. The initial episode may get treated but the gap in the diaphragm goes un-noticed. This may progress to a larger gap and produce a hernia (traumatic diaphragmatic hernia).

## What signs and symptoms does a diaphragmatic hernia produce in an adult?

A baby born with a diaphragmatic hernia usually develops symptoms soon after birth. At times, the symptoms may not become obvious till adulthood. The symptoms are generally of two types:

- Symptoms as a result of pressure on the organs in the chest, e.g. episodes of breathlessness or palpitations, recurrent cough or chest infections
- Symptoms related to the abdominal organs getting caught up in the hernial defect, e.g. nausea, vomiting, fullness in the upper abdomen and episodes of recurrent abdominal pain.

## How is a diaphragmatic hernia diagnosed?

In adults the diaphragmatic hernias may be suspected from a chest x-ray performed for an unrelated problem. A CT scan of the chest and abdomen may be performed that lets the doctors assess how the various organs of the digestive system and the lungs lie within the chest and abdominal cavity. Assessment of the function of the lungs (pulmonary function tests) and other specialised tests may be required if a surgery is planned for fixing the diaphragmatic hernia in an adult patient.

## What are the treatment options?

A diaphragmatic hernia is likely to precipitate an emergency related to an abdominal organ getting stuck in the hernial defect. If the stomach or loops of the small intestine get trapped in this manner the blood supply to these organs may get jeopardised and make the patient seriously ill. In view of this once a diaphragmatic hernia is diagnosed in adult surgery is recommended to fix the problem.

## How is the surgery for a diaphragmatic hernia performed?

Traditionally treatment of diaphragmatic hernias was performed by open surgery either by making an incision on the abdomen or the chest. Today most of the hernias can be repaired by laparoscopic or thoracoscopic surgery. The suitability of one or the other approaches is decided by the surgeon based on the type and size of hernia. Both these operations

performed under general anaesthesia. The surgeon makes three or four small incisions either on the abdomen or the chest, views the area of the hernia and gently reduces the contents that have passed through the hernial defect to their proper place. After this the hernial defect is closed with permamnet or non-absorbable sutures and the area is strengthened by fixing a piece of a special mesh or a net. This ensures that the hernia does not recur. Laparoscopic or thoracoscopic surgery for diaphragmatic hernia is a complex operation that is undertaken by experienced surgeons.

### **What happens if the operation cannot be performed by the laparoscopic or a thoracoscopic method?**

In a small number of patients an attempted laparoscopic or thoracosopic operation may not be successful if the organs stuck in the defect have lost their blood supply and becomes gangrenous. In such instances it is usually necessary to convert to an open operation and remove a portion of the gangrenous organ and fix the hernia.

### **What are the advantages of a laparoscopic or thoracosopic repair of diaphragmatic hernia?**

- Less pain from the incisions after surgery
- Shorter hospital stay
- Shorter recovery time
- Faster return to normal diet
- Faster return to work or normal activity
- Better cosmetic healing

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