THEORY CLASS
DEPARTMENT OF SURGERY
8TH AND 9TH SEMESTER MBBS

- By Dr Narinder Singh

Associate Professor, Pediatric Surgery

Congenital Diaphragmatic Hernia

Def: Migration of abdominal viscera through a defect in the diaphragm into the chest cavity.

Types: Posterolateral - Bochdalek Hernia

Substernal foramen – Morgagni's Hernia

Oesophageal Hiatus – Hiatal Hernia

Septum Transversus Defect- Central Hernia.

CDH refers to herniation through posterolateral foramen of Bochdalek.

Bochdalek Hernia

CDH

Embryogenesis : Non closure of Pleuroperitoneal canals leading to posterolateral defect.

Associated Anomalies- 30-50%

- Lung- pulmonary hypoplasia
- Cardiac-ASD, VSD, Hypoplastic heart
- Malrotation – as a part of defect due to non fixation of gut
- Neural Tube Defects – Spina bifida

Anatomy- 80% seen in left side

- 20% seen on right side

Size of Defect – usually 3-5cm but can be more.

Clinical Features

Early presentation- immediately after birth or with in 24-48hrs.

- Respiratory distress- cyanosis, tachypenia, grunting and retraction.
- Scaphoid abdomen.
- Shift of heart to right side of chest (apparent dextrocardia).
- Breath sounds absent and bowel sounds present on effected side on auscultation.

* Apparent dextrocardia with respiratory distress in a newborn baby diagnosis is CDH until proved otherwise.

Poor prognosis in early presentation.

Clinical Features

Late Presentation -10- 20% cases

- Non-specific recurrent chest infection
- Failure to thrive
- Vomitings
- Recurrent abdominal pain and diarrhoea
- Acute abdominal pain – volvulus of small bowel in malrotation or volvulus of stomach with strangulation.
- Incidental detection on chest Xray.

Better prognosis in late presentation

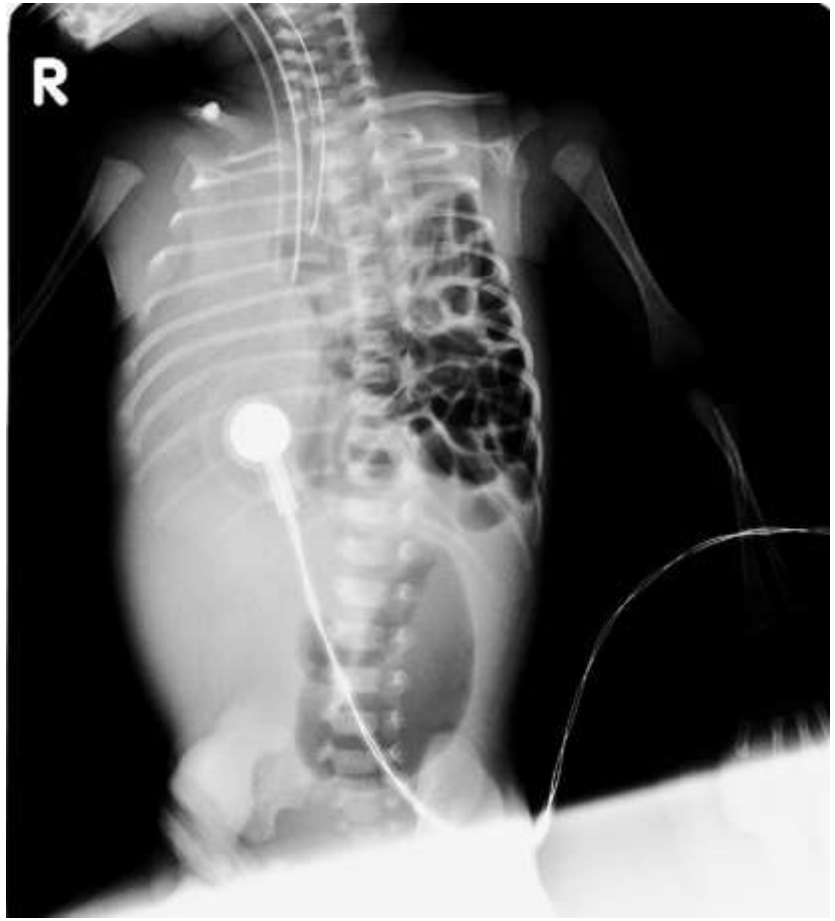
Diagnosis

X-Ray Chest findings:

- Air filled bowel loops in chest.
- Mediastinal shift of heart and trachea to right side.
- Absence of visible diaphragmatic margin.
- Lung collapse.

Contrast study with Barium - to locate stomach and bowel loops in chest.

CHEST X RAY



Diagnosis (contd.)

- CECT Abdomen done- these days for confirmation of diagnosis
- Preoperative Echocardiography to look for cardiac anomalies

Differential Diagnosis

- CCAM – Congenital cystic adenomatoid malformation
- Bronchopulmonary cysts
- Pulmonary sequestration
- Cystic teratoma
- Neurogenic cysts

Management

- No need for immediate surgery.
- Preoperative stabilization in NICU for 24-48hrs.
- Maintain temperature.
- NG tube.
- Oxygen therapy – nasal prong/ endotracheal tube.

  Bag mask oxygenation contraindicated.
- Antibiotics, I/V fluids and Ionotropic support.
- Monitor blood gas parameters.
- Elective ventilation if required.
- ECMO in higher centres (Extracorporeal membrane oxygenation).

Operative Procedure

- Thoracic approach
- Abdominal approach

Thoracic approach – open right side repair

- laparoscopic repair (both sides)

Abdominal approach – preferred

- Easy reduction of viscera
- Defect visualized accurately
- Correction of bowel anomalies
- Abdomen can be stretched to accommodate gut

Operative steps

- Subcostal incision.
- Defect defined.
- Contents taken out of thorax.
- Closure of defect by single layer horizontal mattress sutures of nonabsorbable or delayed absorbable material.
- Ladd’s procedure if malrotation is present.
- Abdominal wall stretched to accommodate gut and incision closed.
- Postoperative elective ventilation.

Surgical repair