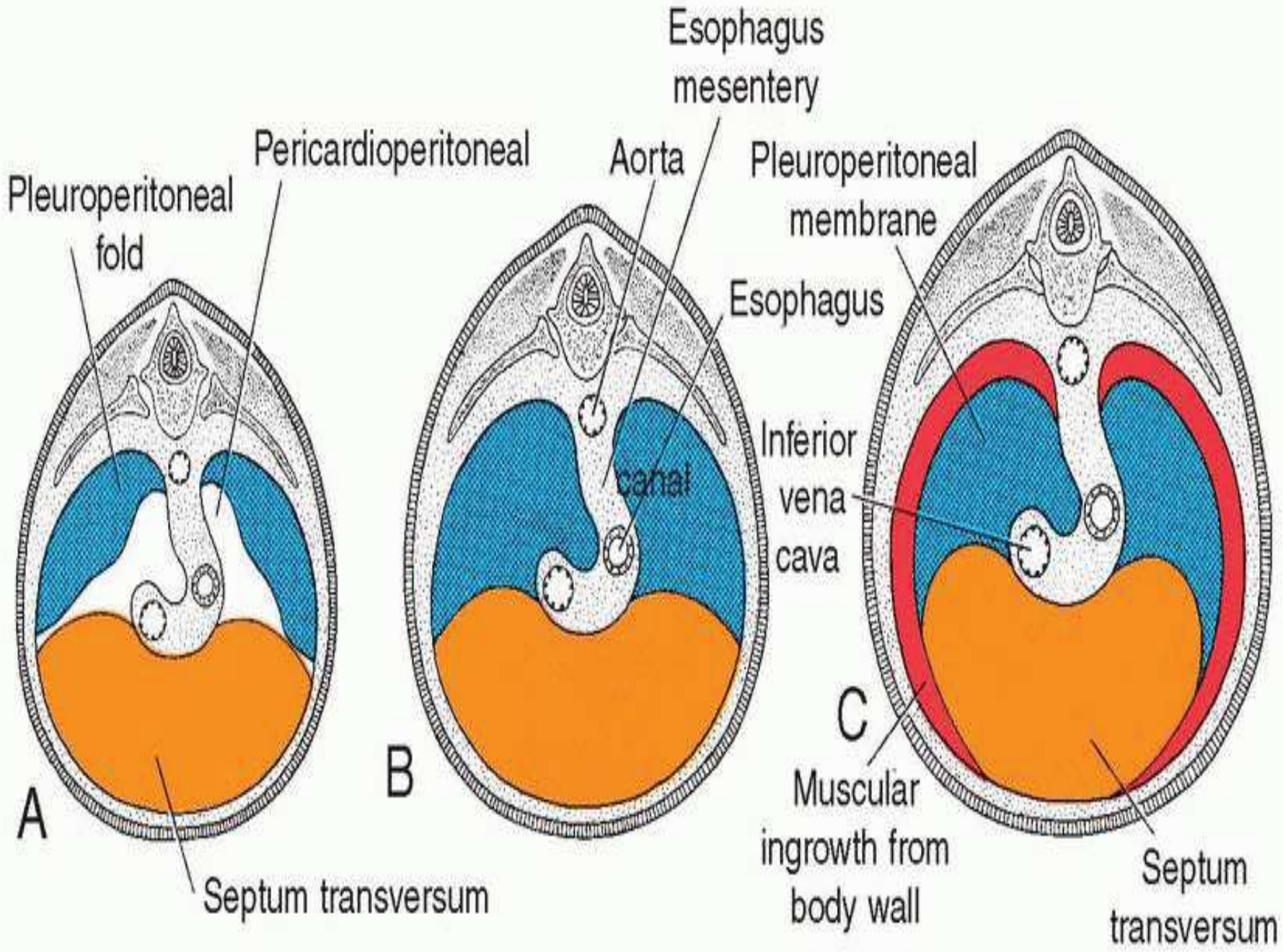
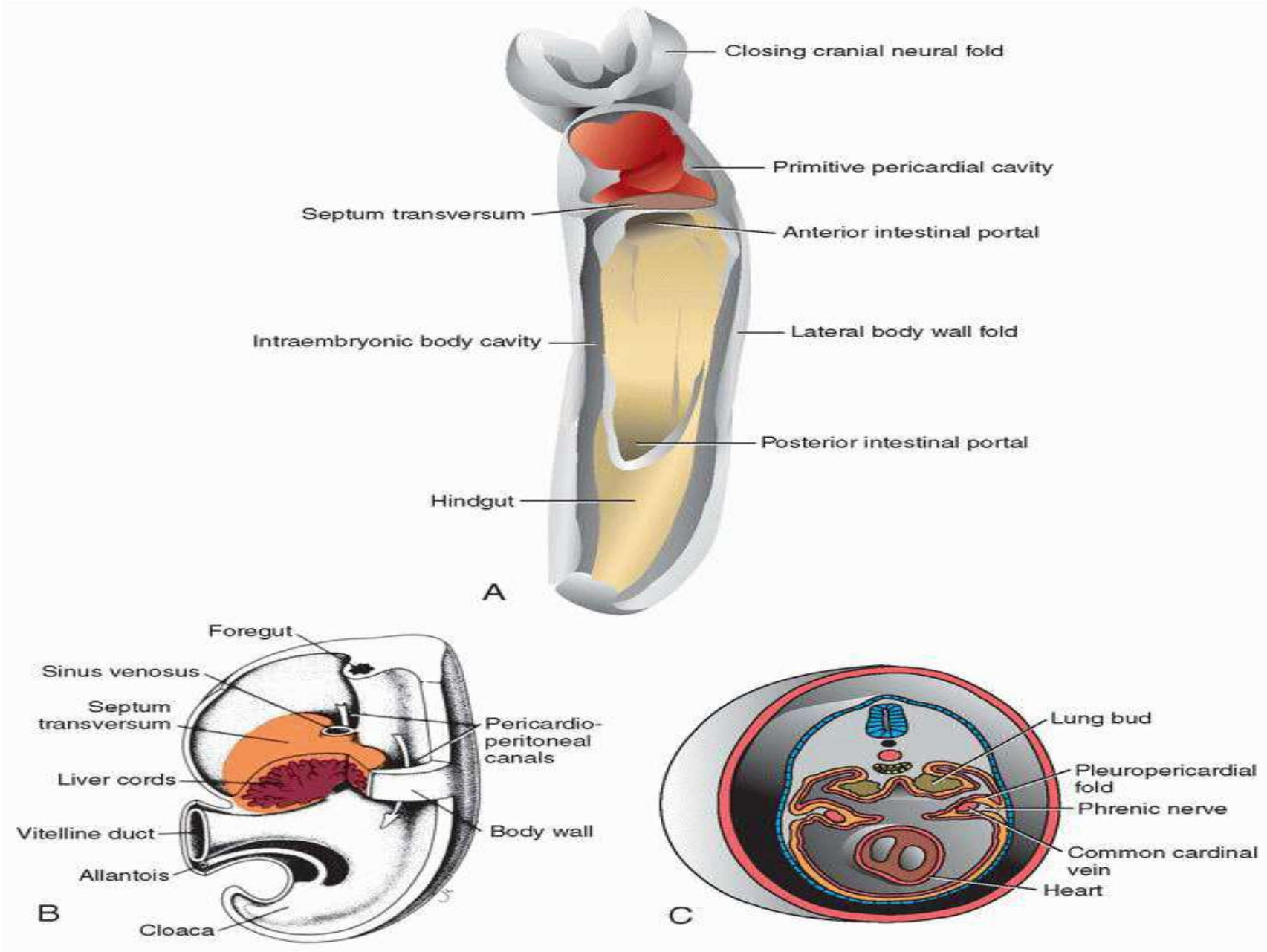

بسم الله الرحمن الرحيم

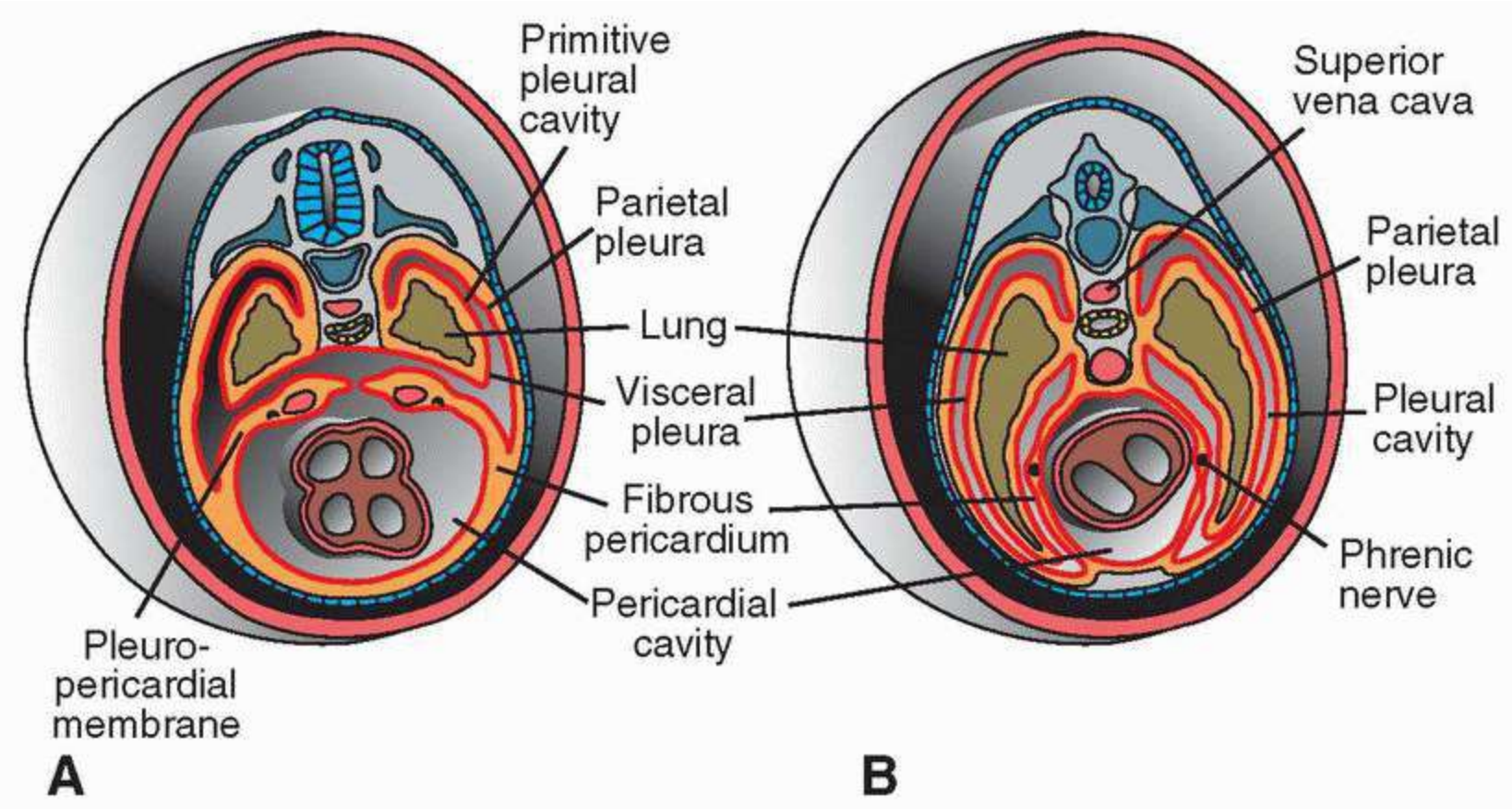
21. DEVELOPMENT OF THE DIAPHRAGM AND APPLIED ANATOMY

The diaphragm is derived from the following structures:

1. The **septum transversum**, which forms the central tendon of the diaphragm;
2. The two **pleuroperitoneal membranes**;
3. Muscular components from **somites at cervical segments three to five**;
4. Mesentery of the esophagus, in which the **crura** of the diaphragm develop .


Esophagus mesentery
Pericardioperitoneal
Aorta
Pleuroperitoneal membrane
Pleuroperitoneal fold
Esophagus
Inferior vena cava
canal
A
B
C
Muscular ingrowth from body wall
Septum transversum
Septum transversum


Closing cranial neural fold
Primitive pericardial cavity
Septum transversum
Anterior intestinal portal
Intraembryonic body cavity
Lateral body wall fold
Posterior intestinal portal
Hindgut
A
Foregut
Sinus venosus
Septum transversum
Pericardio-peritoneal canals
Liver cords
Vitelline duct
Body wall
Allantois
Cloaca
B
Lung bud
Pleuropericardial fold
Phrenic nerve
Common cardinal vein
Heart
C


Primitive pleural cavity
Parietal pleura
Lung
Visceral pleura
Fibrous pericardium
Pericardial cavity
Pleuro-pericardial membrane
A
Superior vena cava
Parietal pleura
Pleural cavity
Phrenic nerve
B

During **the 4th week,**

- **The septum transversum lies opposite cervical somites**
- **The nerve components of the third, fourth, and fifth cervical segments of the spinal cord grow into the septum.**
- **This nerves is called phrenic nerves which supplies the diaphragm.**

- The **phrenic nerves** supply the diaphragm with its motor and sensory innervation.
- Since the most peripheral part of the diaphragm is derived from mesenchyme of the **thoracic wall.**
- So its sensory supply is from **lower intercostal nerves.**

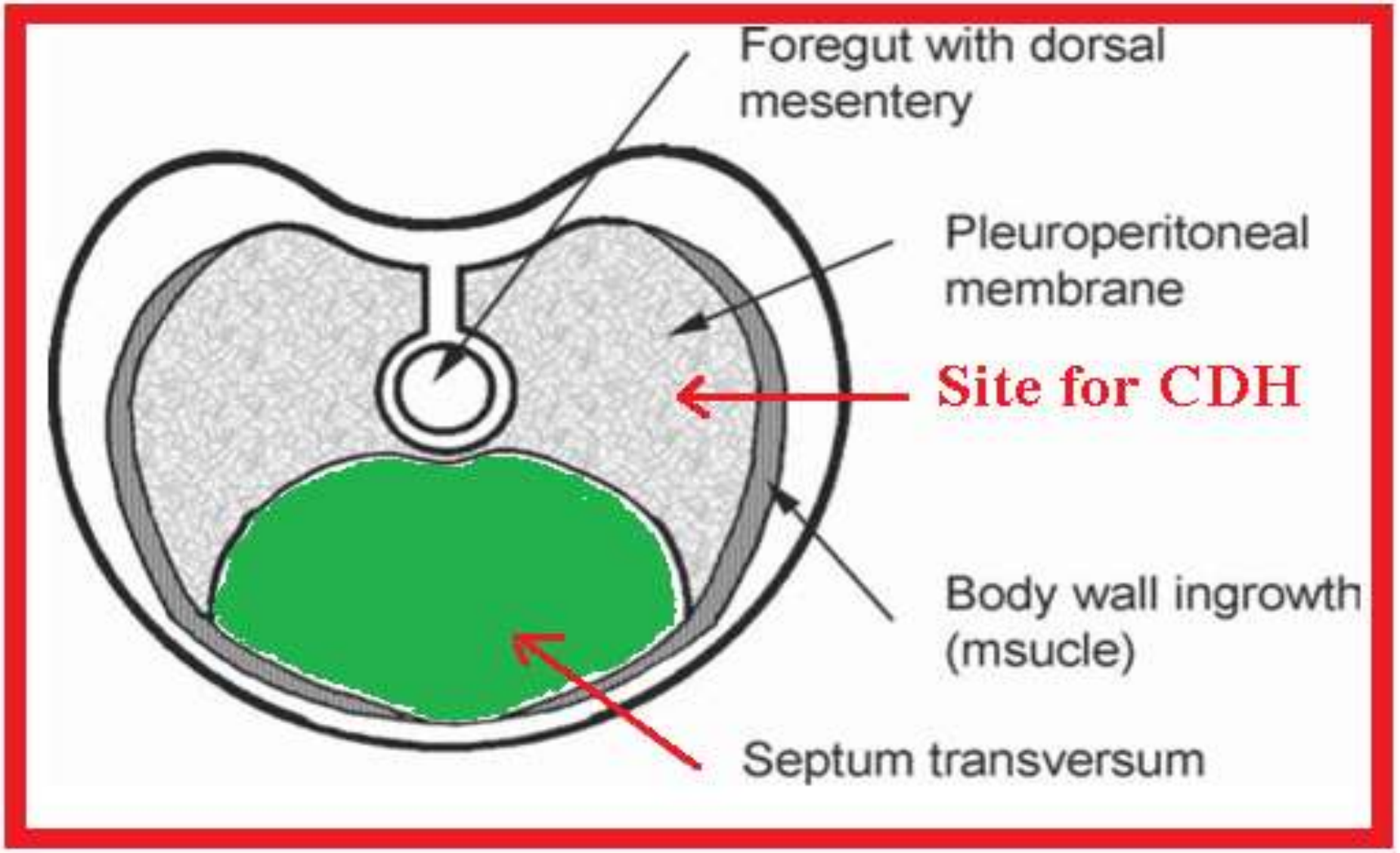
Congenital diaphragmatic hernia (CDH)

It occurs when the **Thoracoabdominal Diaphragm** fails to close during development. Which allows the intestine etc.to go into the thorax.

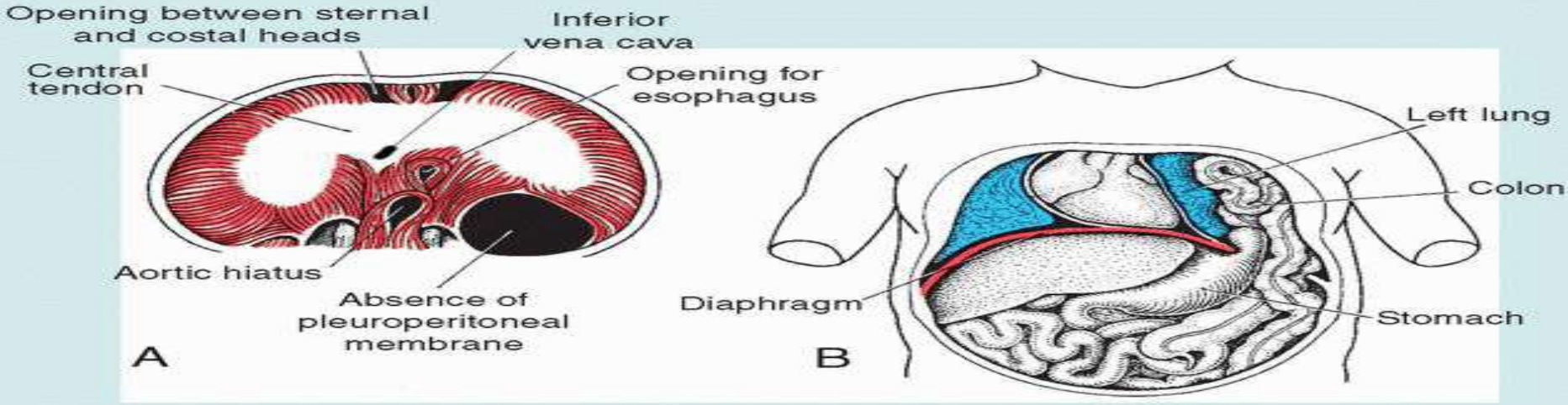
This can be a cause of partial failure of the development of the contents of the thorax.

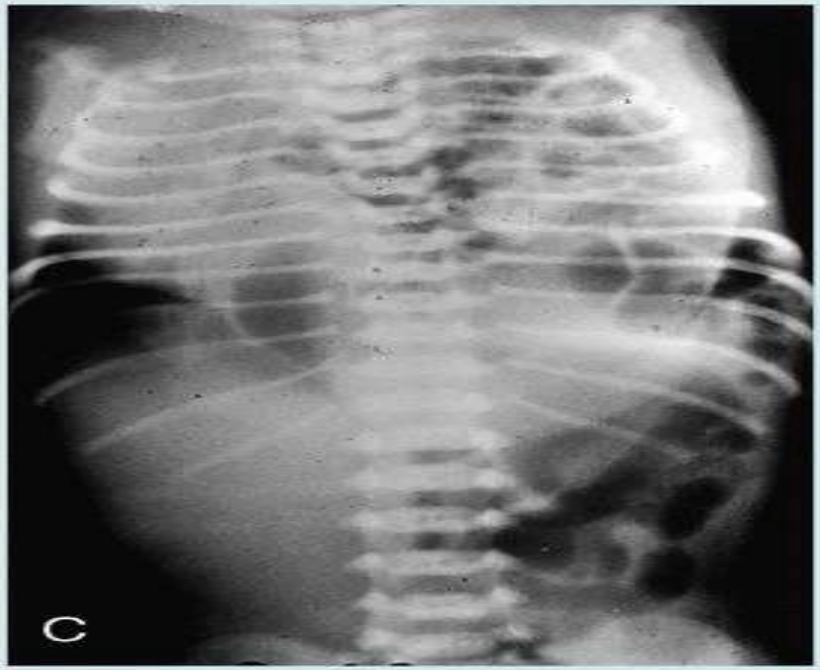
This also causes lake of development of abdominal wall which also causes difficulty in surgical treatment of this condition. As abdomen can not accommodate the intestine safely after surgical treatment.

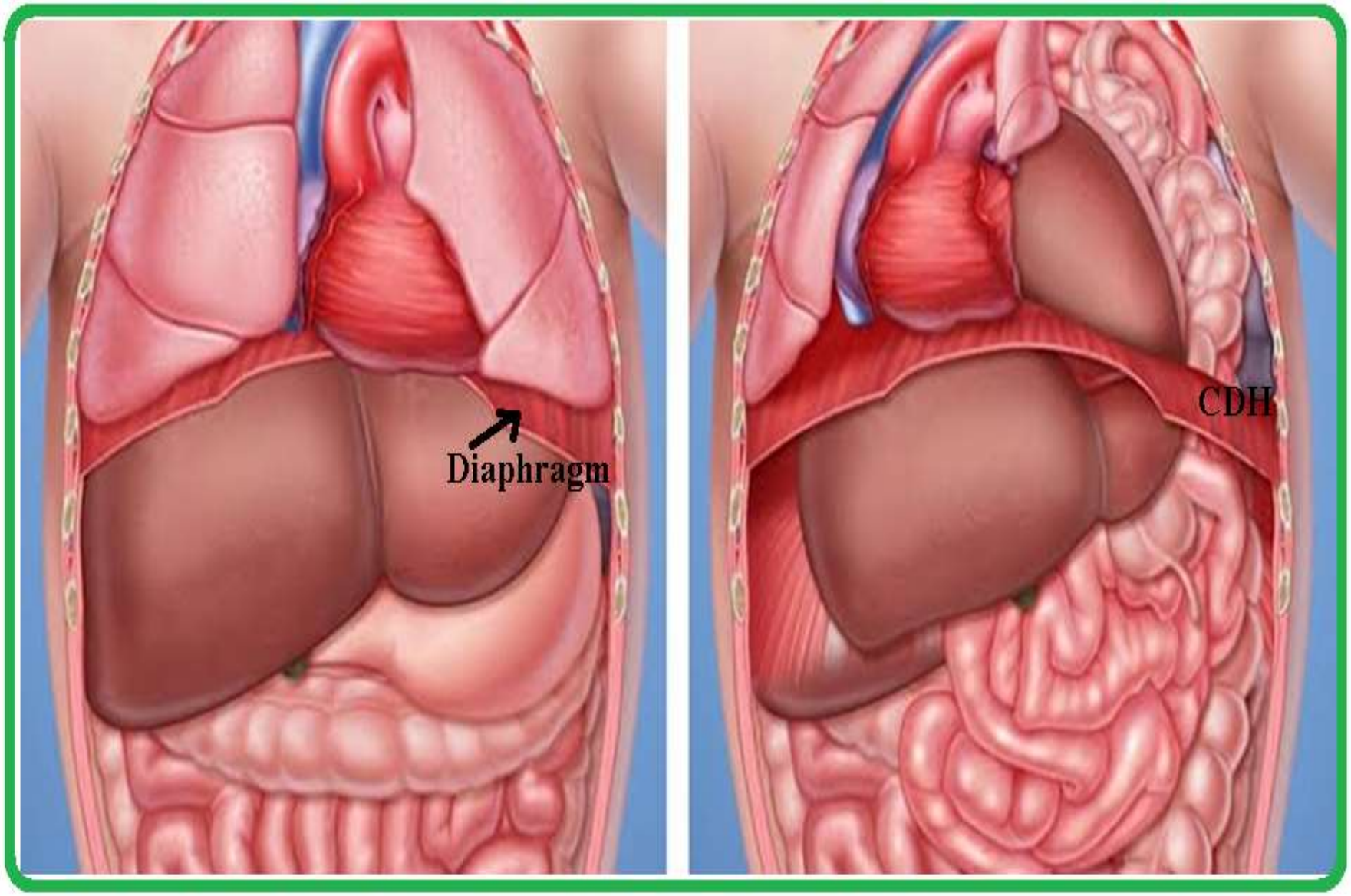
The pleuroperitoneal folds which form pleuroperitoneal membrane a site for CDH



Finding of CDH. Look at left defect in pleuroperitoneal membrane.







THANKS