

وسهلا

أهلا



الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب - جامعة الزقازيق - مصر

رئيس قسم التشريح و الأنسجة و الأجنة - كلية الطب - جامعة مؤتة - الأردن

مساعد العميد لشؤون الطلاب والامتحانات - كلية الطب - جامعة مؤتة - الأردن

دكتورة من جامعة كولونيا المانيا

Dr. Youssef Hussein Anatomy اليوتيوب

جروب الفيس د. يوسف حسين (استاذ التشريح)

- **The third week**
- **Folding of Embryo**

- **Folding of the embryo**
- **begins during 3rd week and completed at 4th week**



**** Causes of folding:**

1. The most common cause is growth and development of the **somites**.
2. Rapid increase in the amount of **amniotic fluid** around the embryo.
3. Rapid growth of the cranial part of the **neural tube** than its caudal part.
4. Unequal rate of growth and development of the **internal organs**.

Types of folding

Craniocaudal folding

- **Head fold**, cranial part of the embryo bends ventral to the cranial end of the notochord.
- **Tail fold**, caudal part of the embryo bends ventral to the caudal end of the notochord.

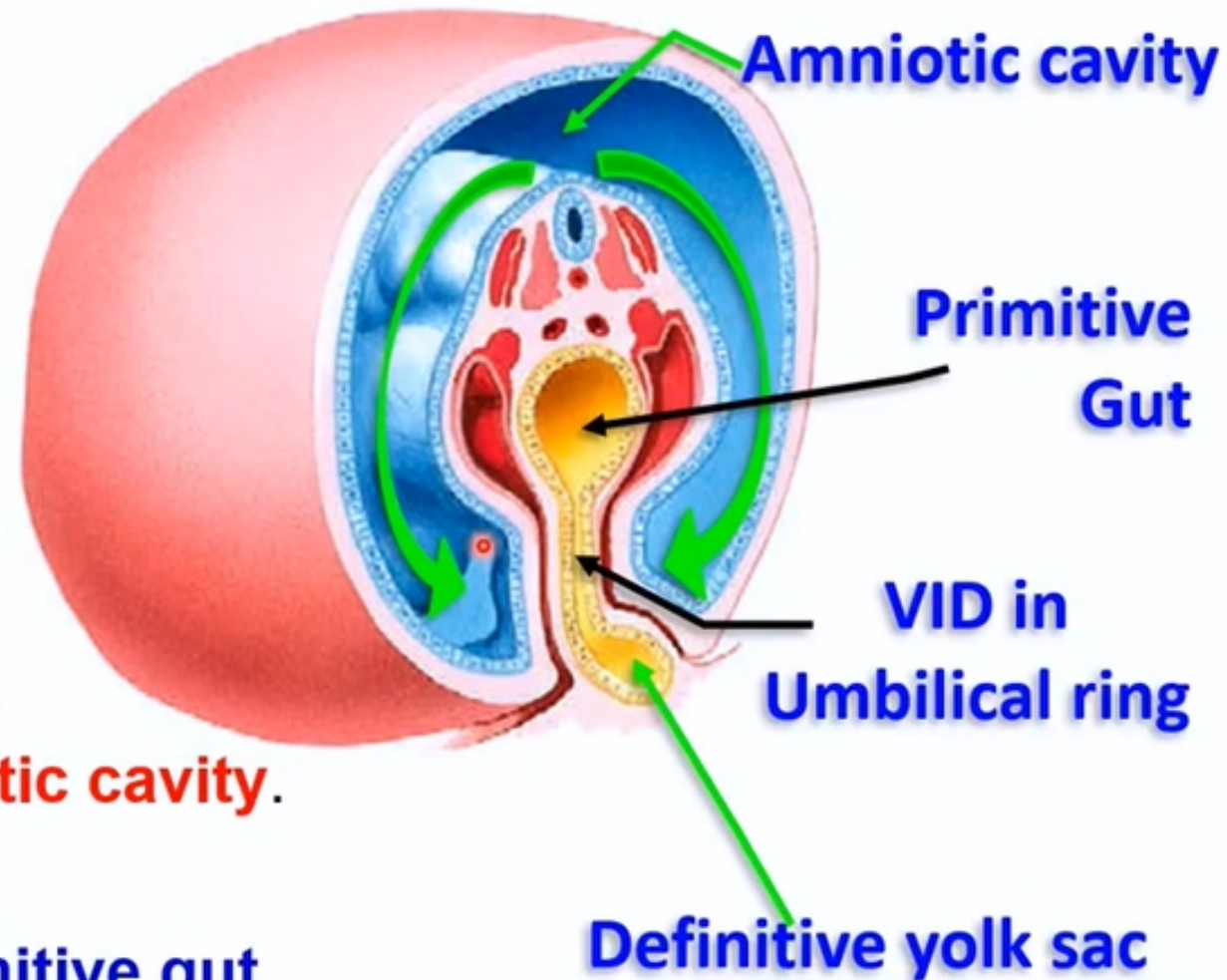
Lateral folding

- **Right and left Lateral folding**: The margins of the embryo bend ventrally.



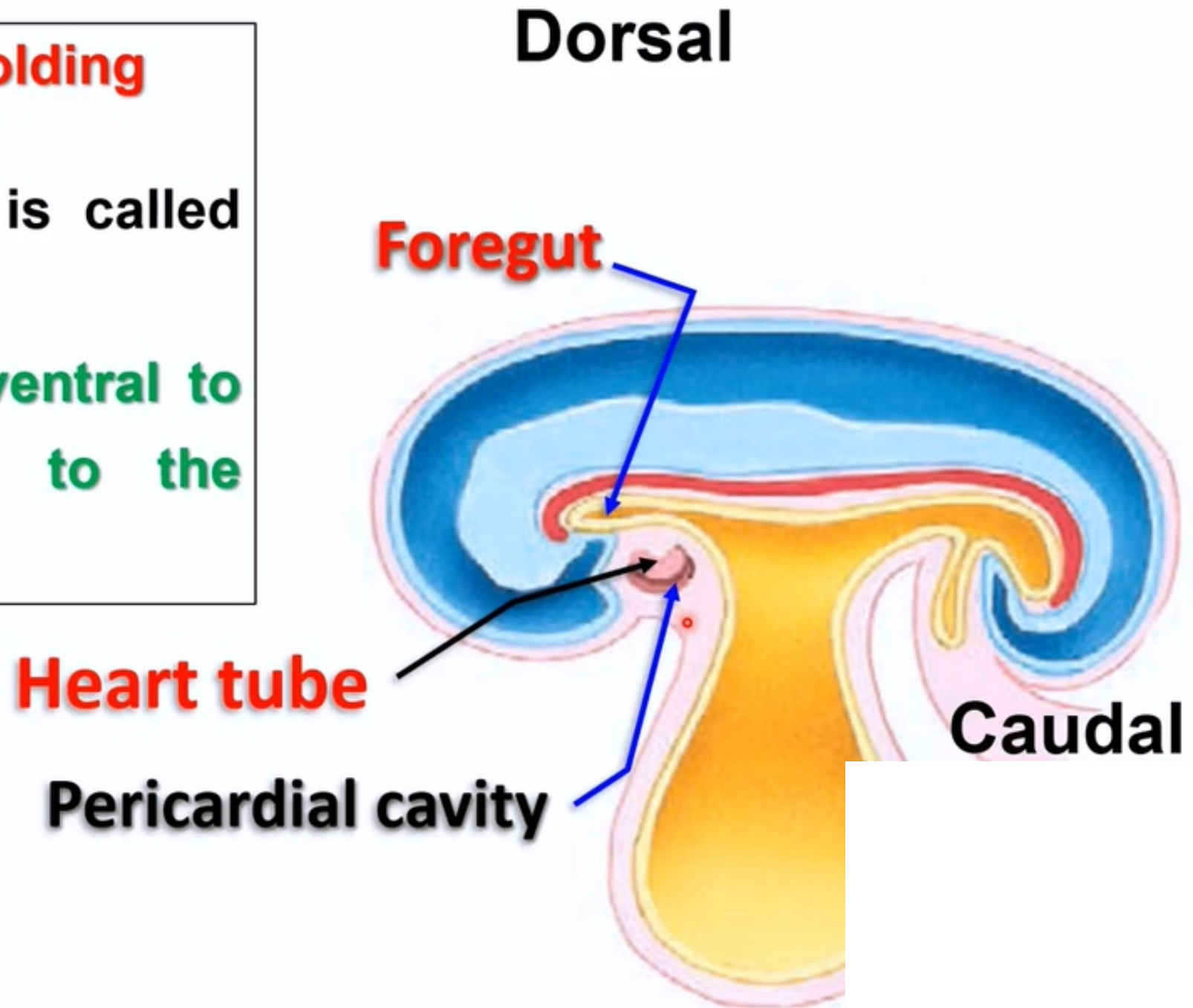
** Results of the folding

- The embryo becomes cylindrical in shape.
- The embryo is **surrounded by the amniotic cavity**.
- **The 2ry yolk sac** divides into:
 - a- Part inside the embryo forming the **primitive gut**.
 - b- Part remains outside the body called the **definitive yolk sac**.
- The 2 parts are connected at the **umbilical ring** by vitellointestinal duct
- **The point of meeting** of the folds is the umbilical ring.



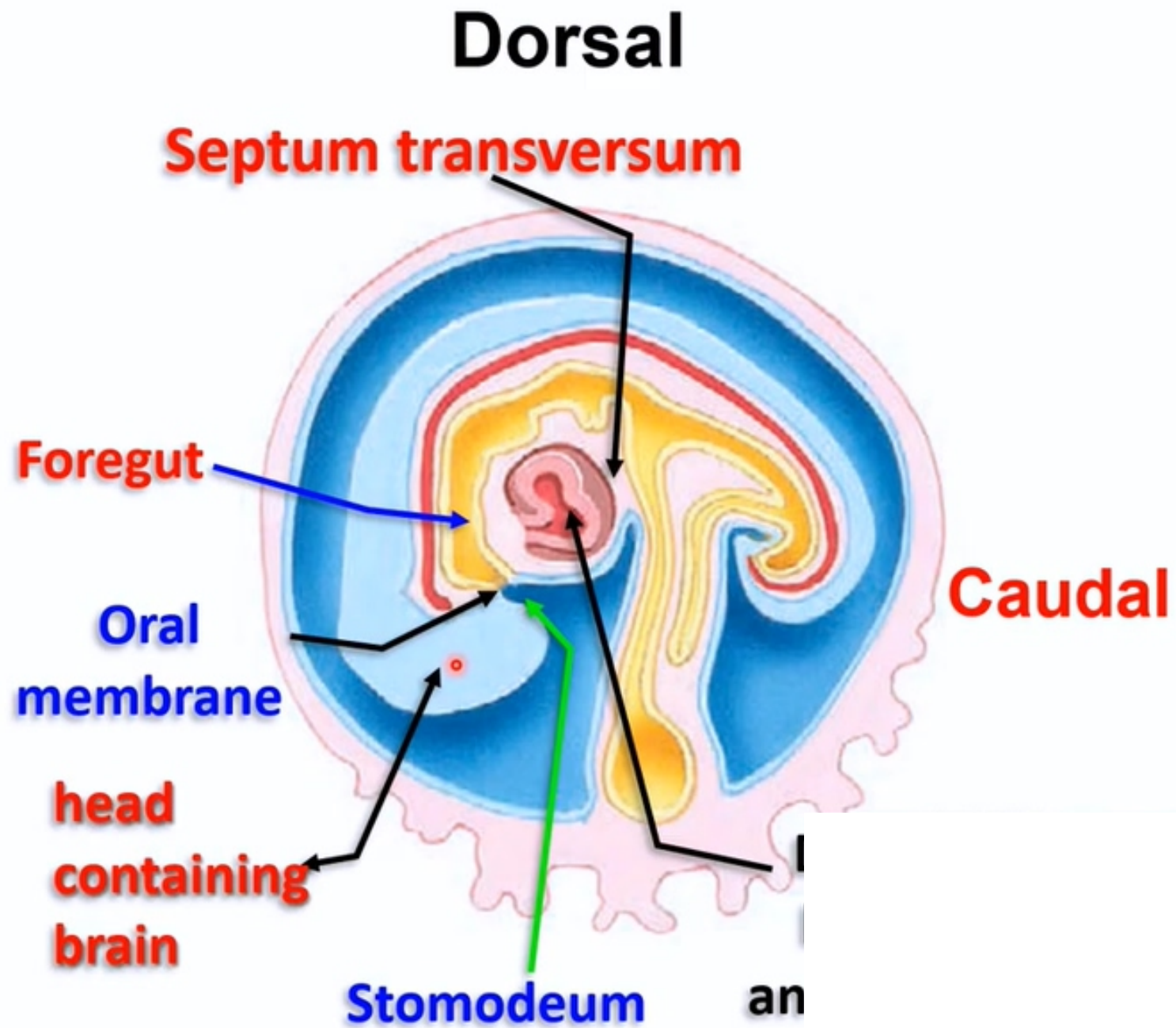
➤ Results of head Folding

- The part of the gut is called foregut
- **The heart tube lies ventral to foregut and dorsal to the pericardial cavity**



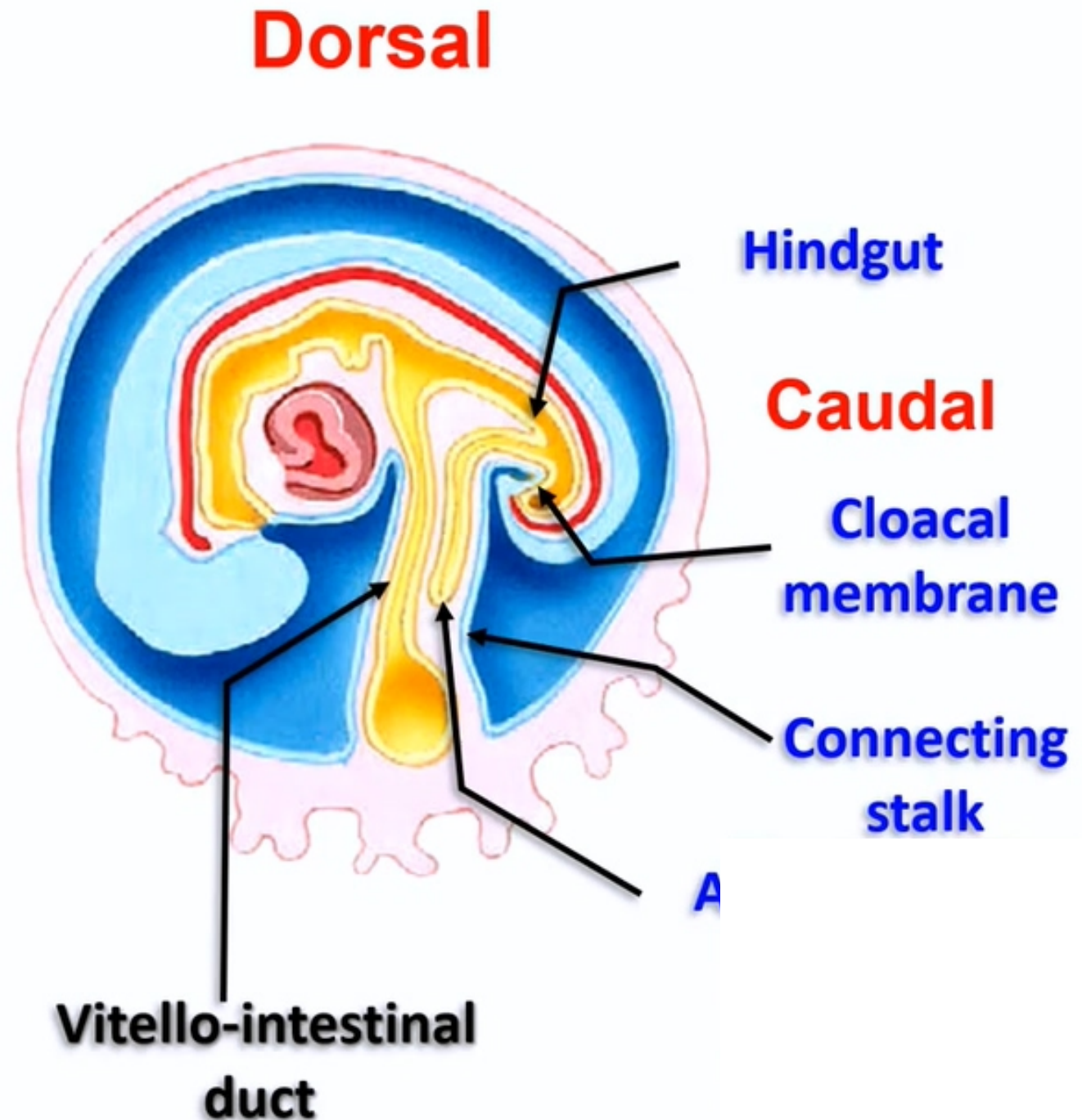
➤ Results of head Folding

- The **septum transversum** lies **caudal** to the heart tube and pericardial cavity
- The **oral membrane** and **Stomodeum** (Primitive mouth cavity) **ventral** to the Heart tube & pericardial cavity
- The **head** containing **forebrain** become the most **ventral and cranial** part of the embryo.

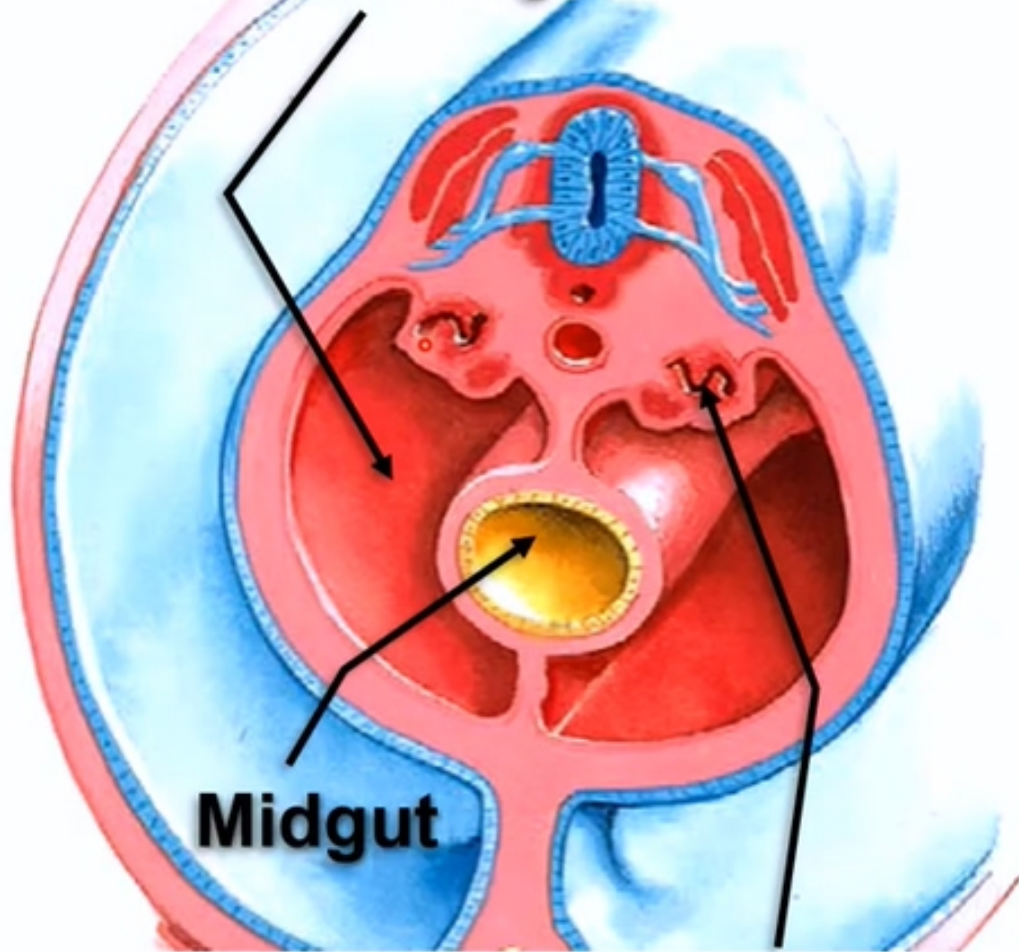


➤ Results of tail Folding

- The part of the is called hindgut and its terminal dilated part called Cloaca
- The cloacal membrane ventral to caudal end of embryo and caudal to allantois
- The connecting stalk (Future umbilical cord) ventral to embryo and containing allantois (small diverticulum develops from caudal part of hindgut) and vitellointestinal duct



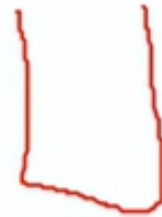
Single peritoneal cavity



Intermediate mesoderm

➤ Results of lateral Folding

- The embryo becomes **cylindrical** in shape.
- The part of the gut is called **midgut** and connecting to the dorsal wall of the embryo by dorsal mesentery
- The caudal parts of the intraembryonic coelom fuse together to form **a single peritoneal cavity**.
- The **intermediate mesoderm** becomes dorsal to the peritoneal cavity



dr_youssefhussein@yahoo.com

