

**Veterinary Anatomy**  
**(Unit – 8)**

**Topic**

**FOLDING OF EMBRYO**

**by**

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## **FOLDING OF EMBRYO**

- There is progressive increase in the size of the embryonic disc due to rapid growth of cells of central part of embryonic disc and rapid growth of somites.**
- This causes conversion of flat pear-shaped germ disc into a cylindrical embryo.**
- The head and tail ends of the disc remain relatively close together. The increased length of the disc causes it to bulge upward into the amniotic cavity.**

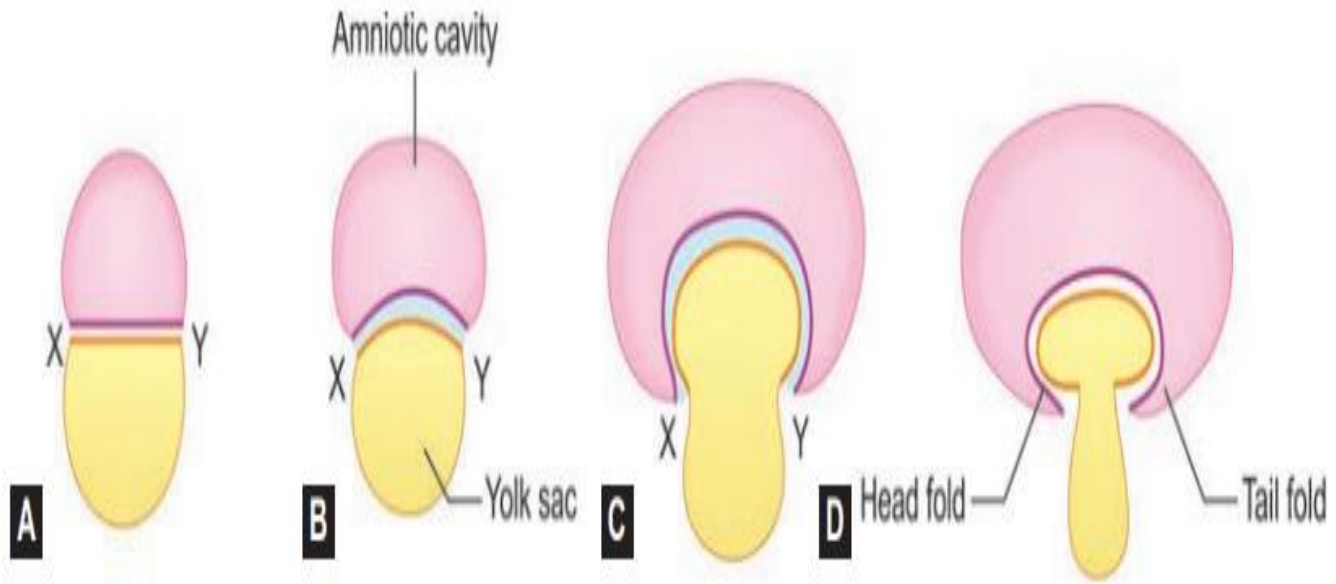
**❑ With the formation of the head and tail folds, parts of the yolk sac become enclosed within the embryo.**

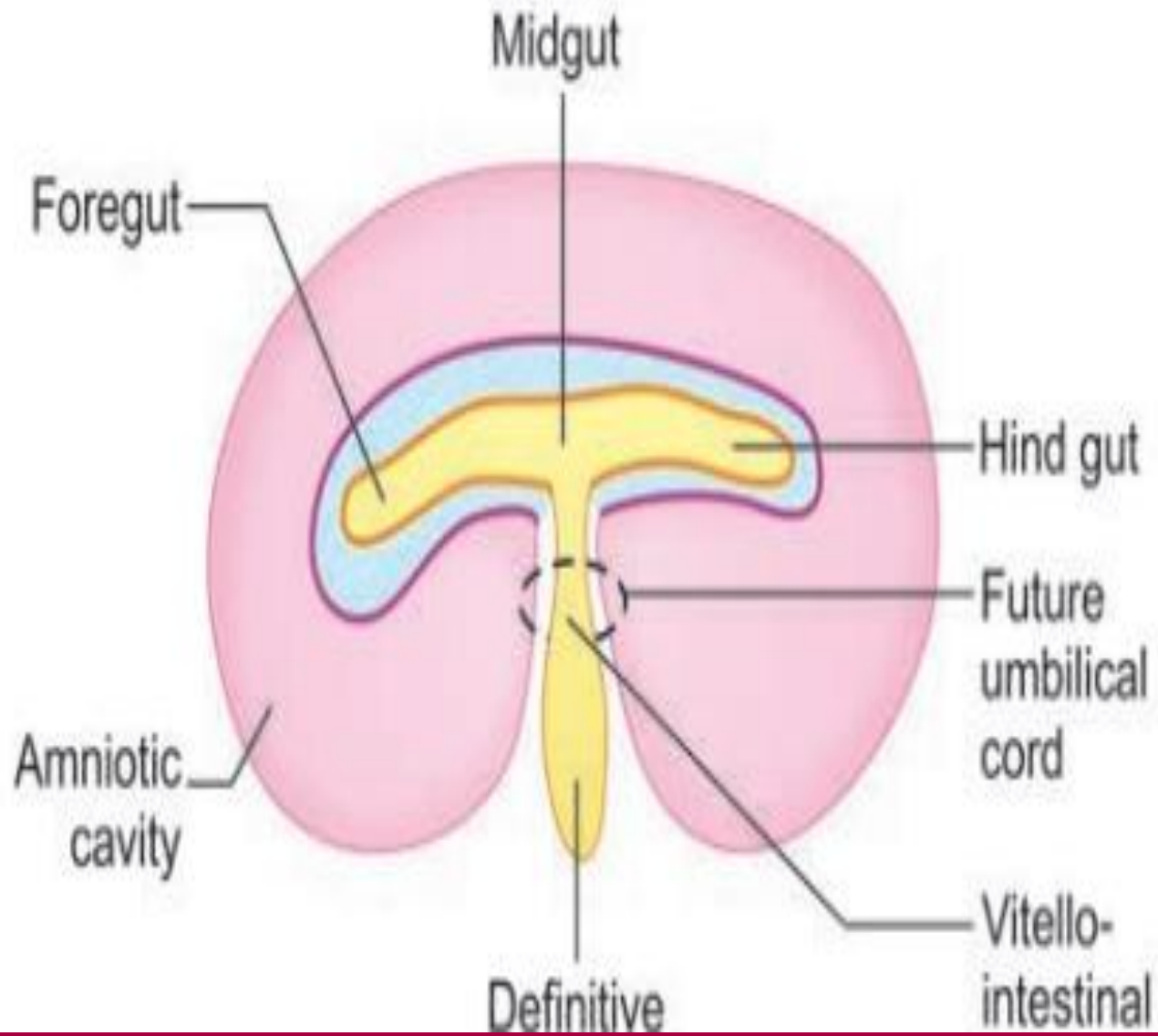
**❑ In this way, a tube lined by endoderm is formed in the embryo. This is the primitive gut, from which most of the gastrointestinal tract is derived.**

**❑ At first, the gut is in wide communication with the yolk sac. The part of the gut cranial to this communication is called the foregut; the part caudal to the communication is called the hindgut; while the intervening part is called the midgut .**

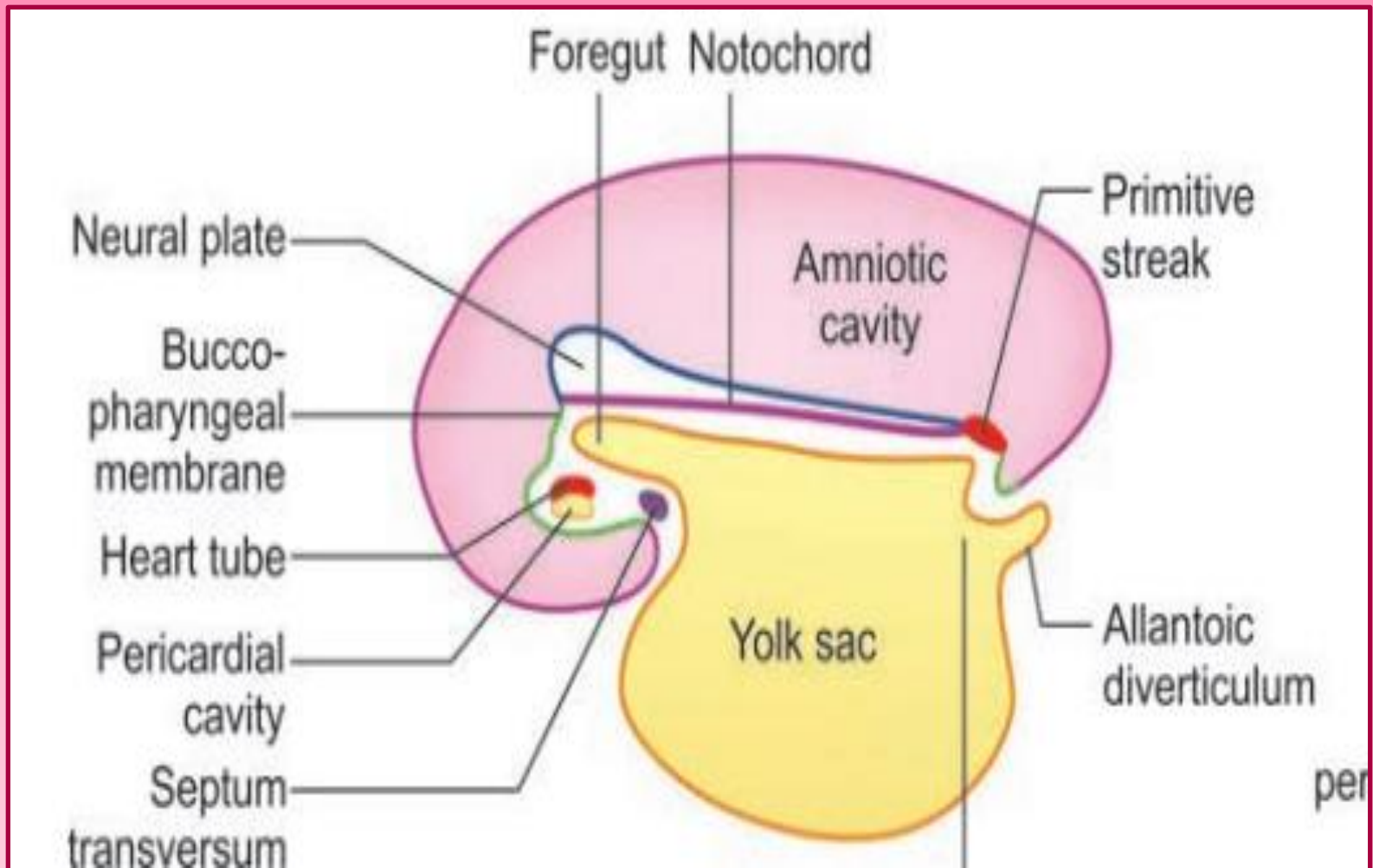
**❑ The communication with the yolk sac becomes progressively narrower. As a result of these changes, the yolk sac becomes small and inconspicuous, and is now termed the definitive yolk sac (also called the umbilical vesicle).**

**❑ The narrow channel connecting it to the gut is called the vitellointestinal duct (also called vitelline duct; yolk stalk or omphalomesenteric duct). This duct becomes elongated and eventually disappears.**





<i>Before head fold (Cranial to caudal)</i>	<i>After head fold</i>			
<ul style="list-style-type: none"> <li>• Septum transversum</li> <li>• Heart, pericardial cavity</li> <li>• Buccopharyngeal membrane</li> <li>• Neural tube and notochord</li> <li>• Primitive node</li> <li>• Primitive streak</li> <li>• Cloacal membrane</li> <li>• Connecting stalk with allantois</li> </ul>	<i>Ventral to gut (Cranial to caudal)</i>	<i>Dorsal to gut (Cranial to caudal)</i>	<i>Cranial to gut</i>	<i>Caudal to gut</i>
	<ul style="list-style-type: none"> <li>• Stomodeum</li> <li>• Pericardial cavity and heart</li> <li>• Septum transversum</li> <li>• Connecting stalk with allantois</li> </ul>	<ul style="list-style-type: none"> <li>• Neural tube and notochord</li> <li>• Primitive node</li> <li>• Primitive streak</li> </ul>	Brain vesicle	Proctodeum

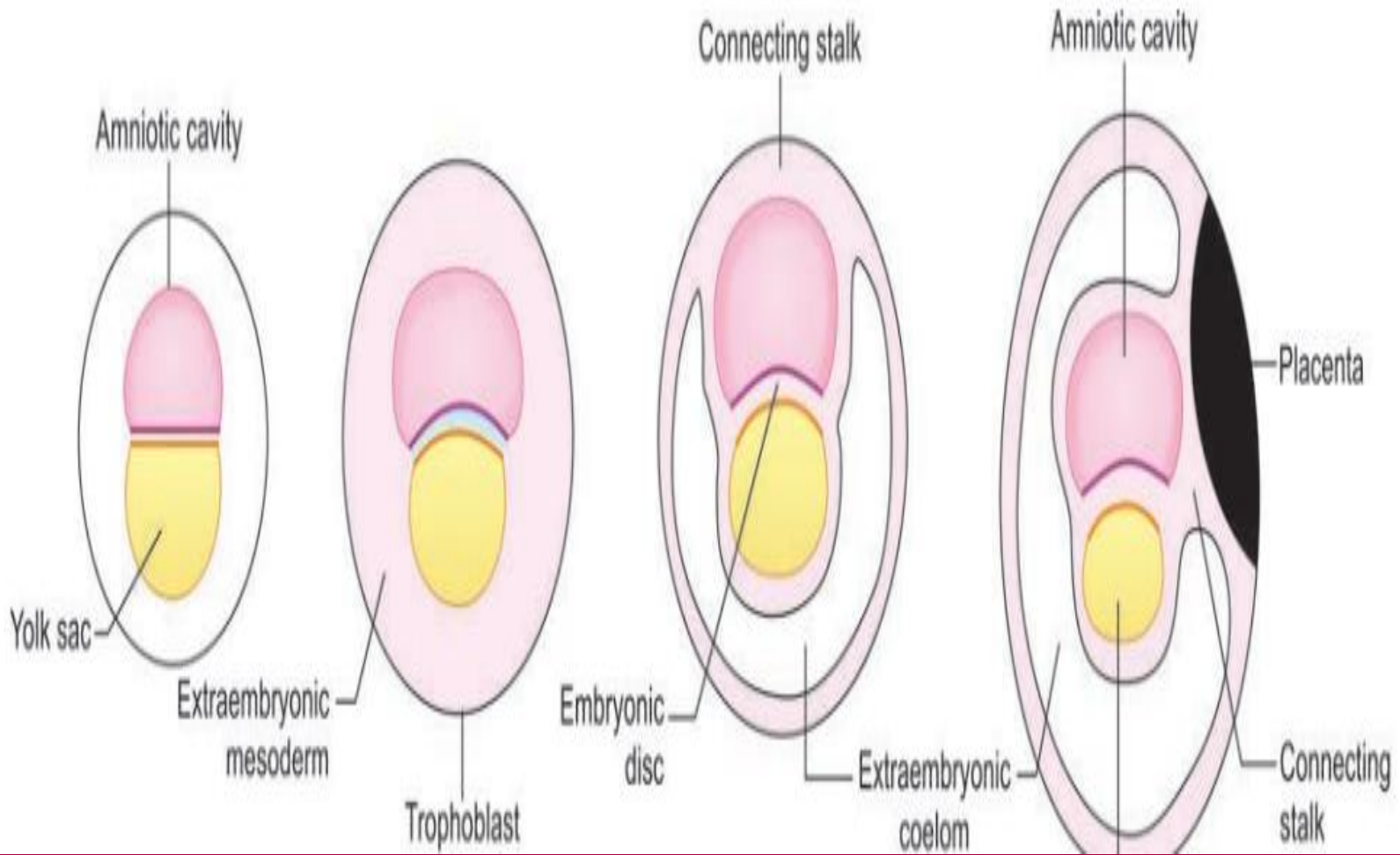


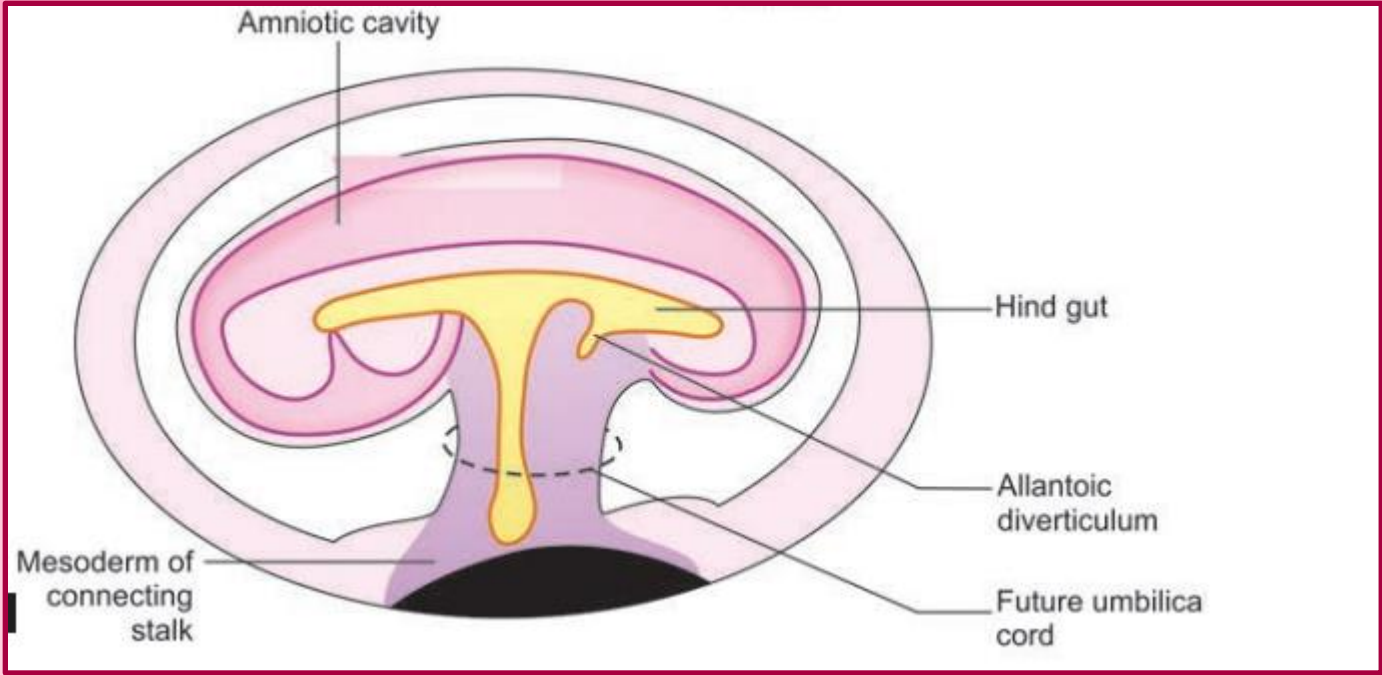
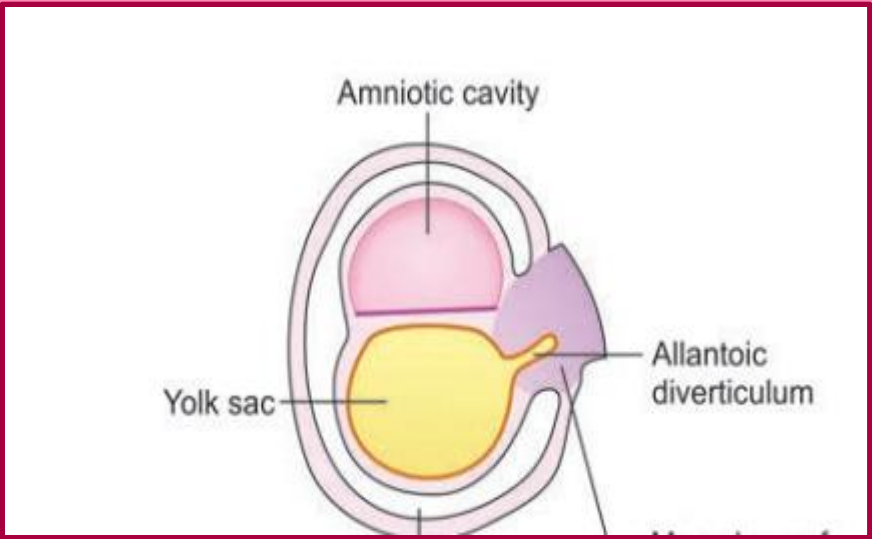
**❑ With the formation of the cavity, the embryo (along with the amniotic cavity and yolk sac) remains attached to the trophoblast only by extraembryonic mesoderm into which the coelom does not exist. This extraembryonic mesoderm forms the connecting stalk.**

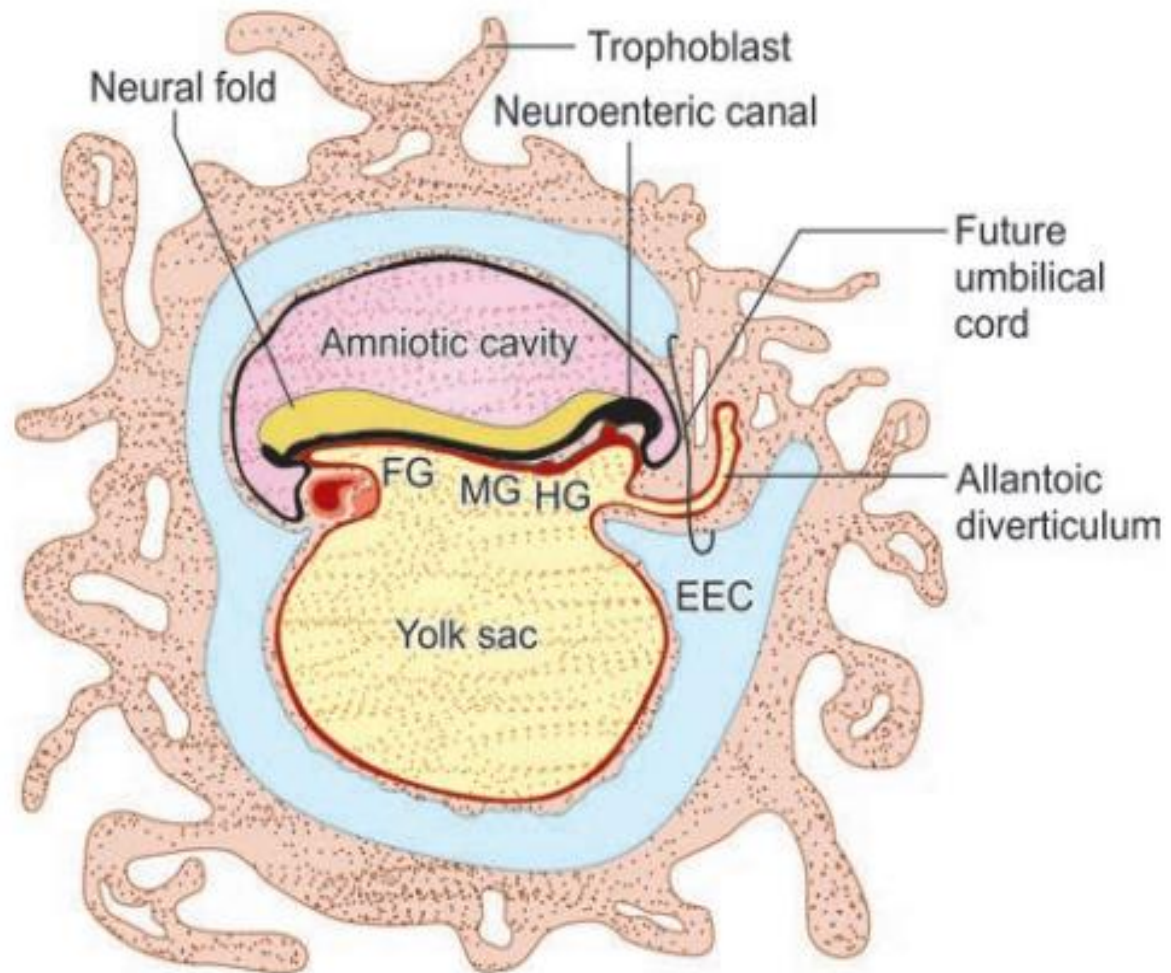
**❑ The trophoblast and the tissues of the uterus together form an important organ, the placenta, which provides the growing embryo with nutrition and with oxygen. It also removes waste products from the embryo. The importance of the connecting stalk is that it is the only connecting link between the embryo and the placenta.**

**❑ As the embryo grows, the area of attachment of the connecting stalk to it becomes relatively smaller. Gradually this attachment is seen only near the caudal end of the embryonic disc.**









## **Contents of umbilical cord**

- ❑ Vitellointestinal duct and remnants of the yolk sac**
- ❑ Mesoderm (extraembryonic) of the connecting stalk. This mesoderm gets converted into a gelatinous substance called “Wharton’s jelly”. It protects blood vessels in the umbilical cord.**
- ❑ Blood vessels that pass from the embryo to placenta**
- ❑ A small part of the extraembryonic coelom**

## **Allantoic diverticulum**

**Before the formation of the tail fold, a small endodermal diverticulum called the allantoic diverticulum arises from the yolk sac near the caudal end of the embryonic disc. This diverticulum grows into the mesoderm of the connecting stalk and helps in the development of urinary bladder.**

THANKS