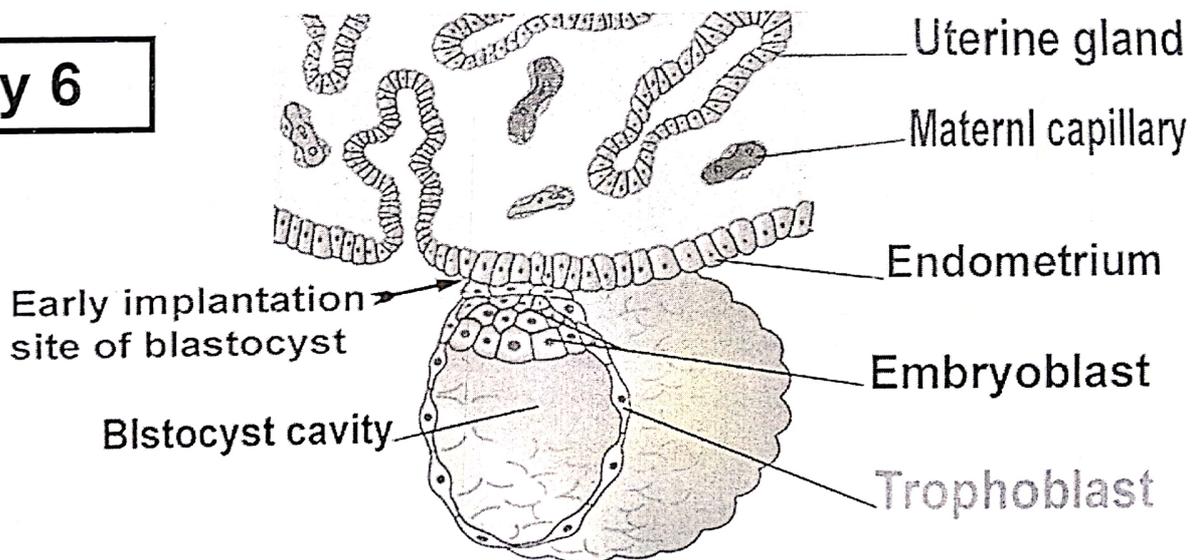


Implantation-1

Many events in the 2nd week occurs in twos.

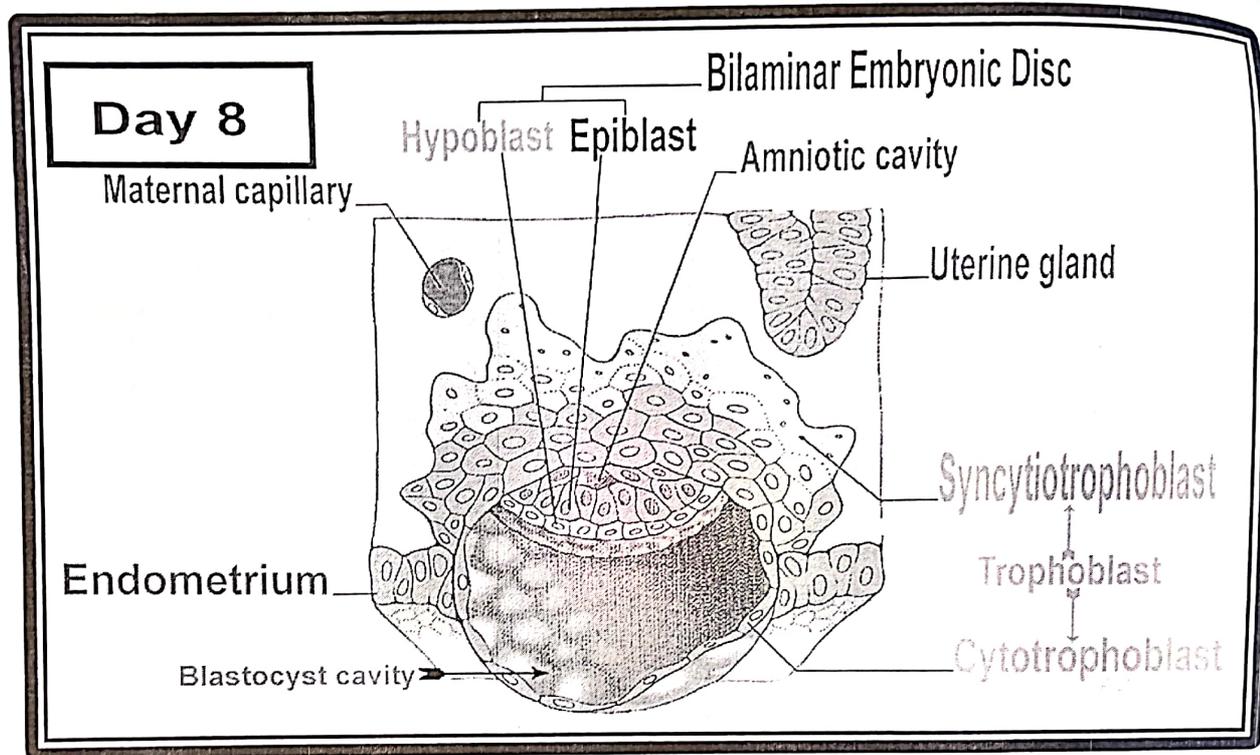
To memorize these events recall "rule of twos".

Day 6

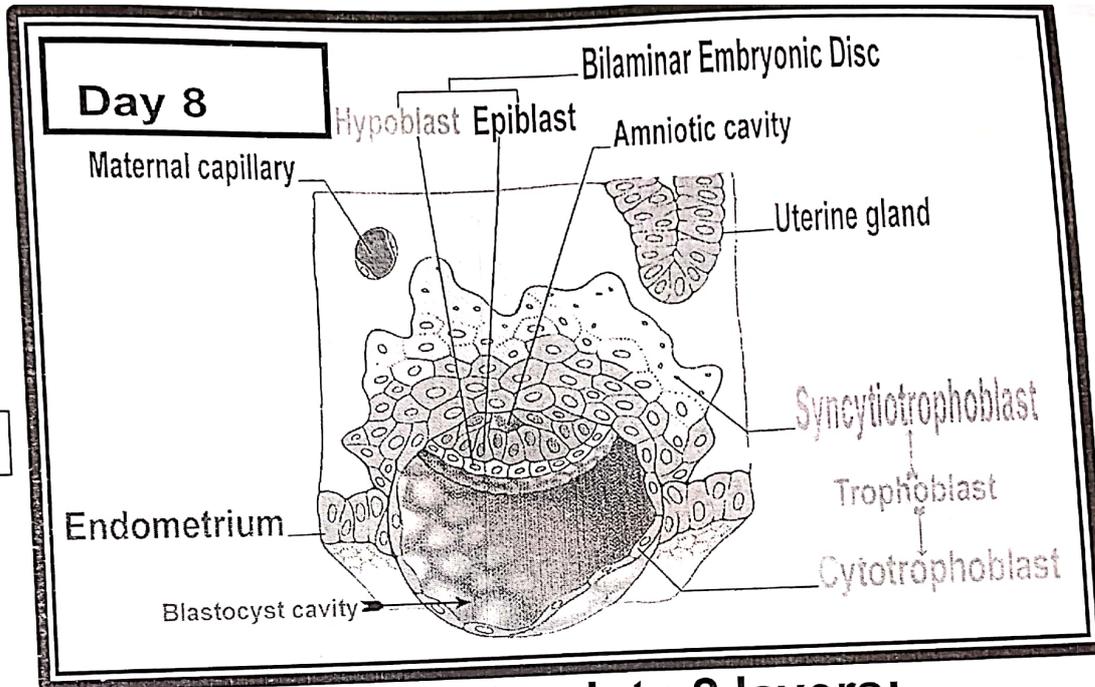


At 6 days after fertilization, the trophoblast attached to the endometrium at the embryonic pole of the blastocyst.

Day 8-A



- **At Day 8**, as the trophoblast contacting the endometrium, the trophoblast is **induced** to differentiate into two layers:
 1. **Inner cytotrophoblast** (mononucleated single cells).
 2. **Outer syncytiotrophoblasts** (a mass of cytoplasm containing many dispersed nuclei, without cell membrane).
- Both layers form the fetal part of the placenta (**Chorion**).



Day 8- B

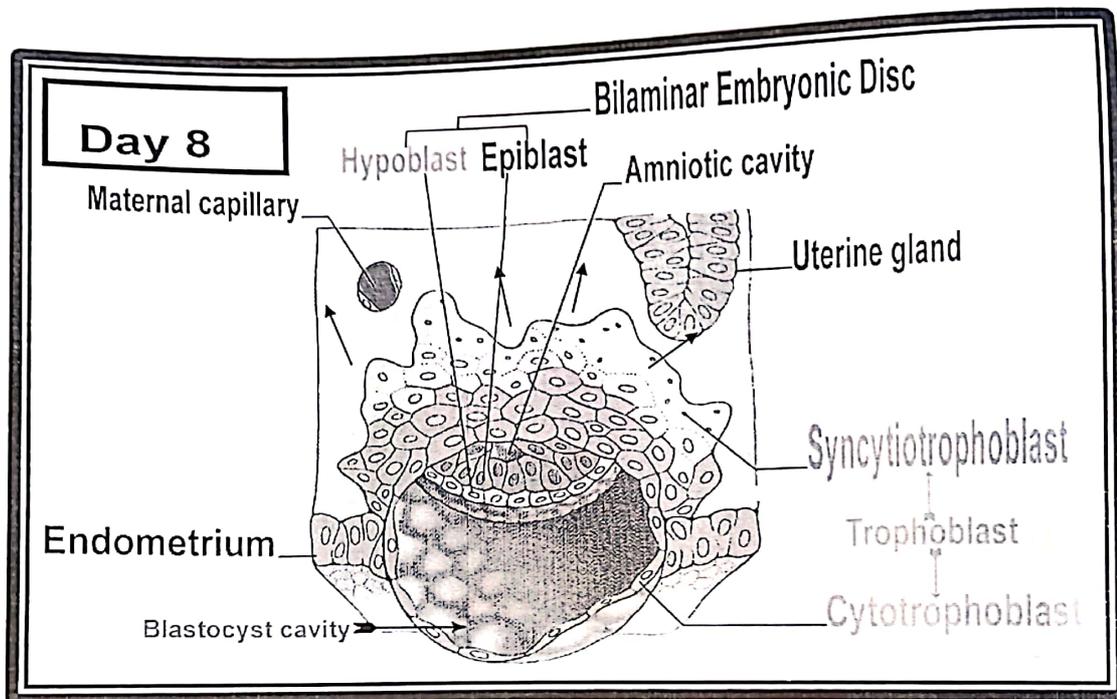
❖ **Embryoblast differentiates into 2 layers:**

1. **Epiblast.** (Columnar cells).

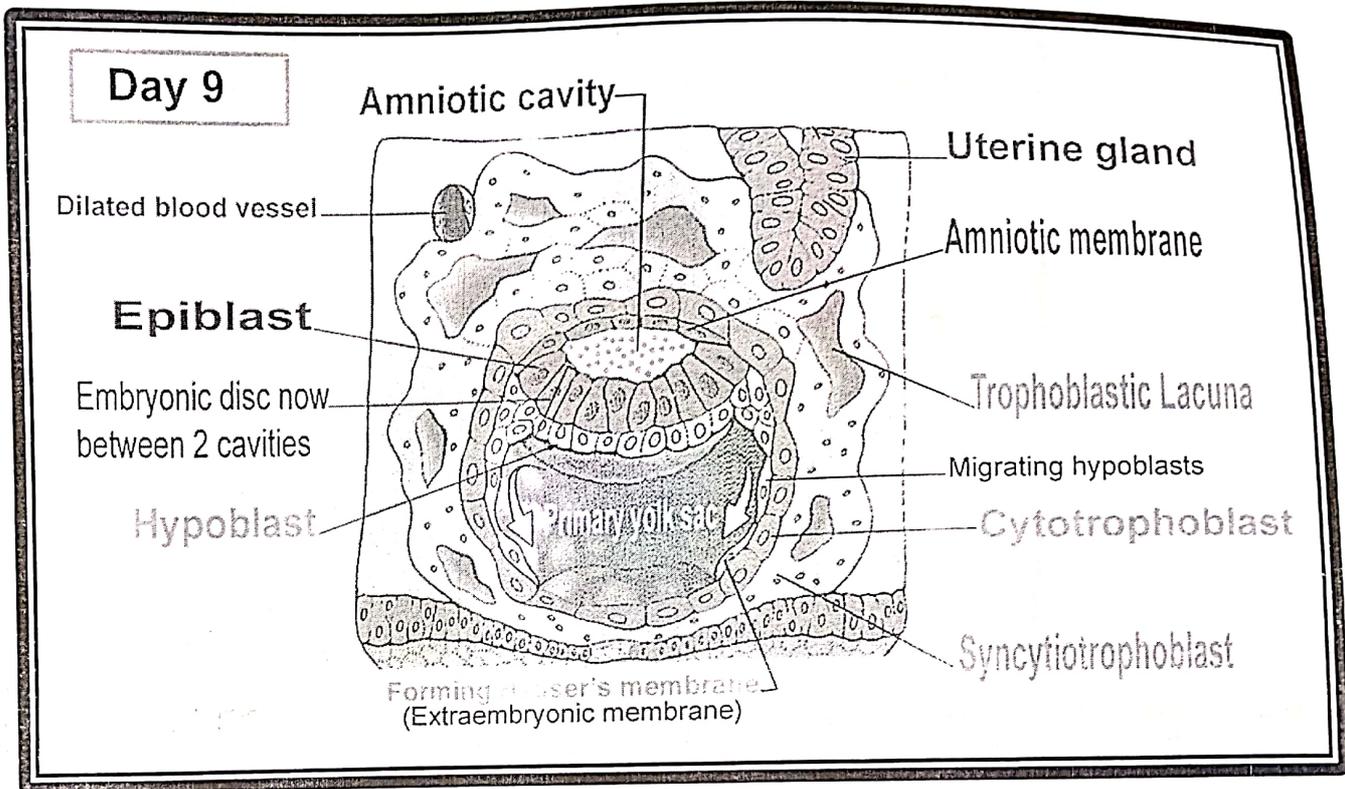
2. **Hypoblast.** (Cuboidal cells)

- The resulting 2-layeres is called Bilaminar embryonic disc.
- Thereafter, a small **Amniotic cavity** appears within the epiblast cells.

Day 8- C

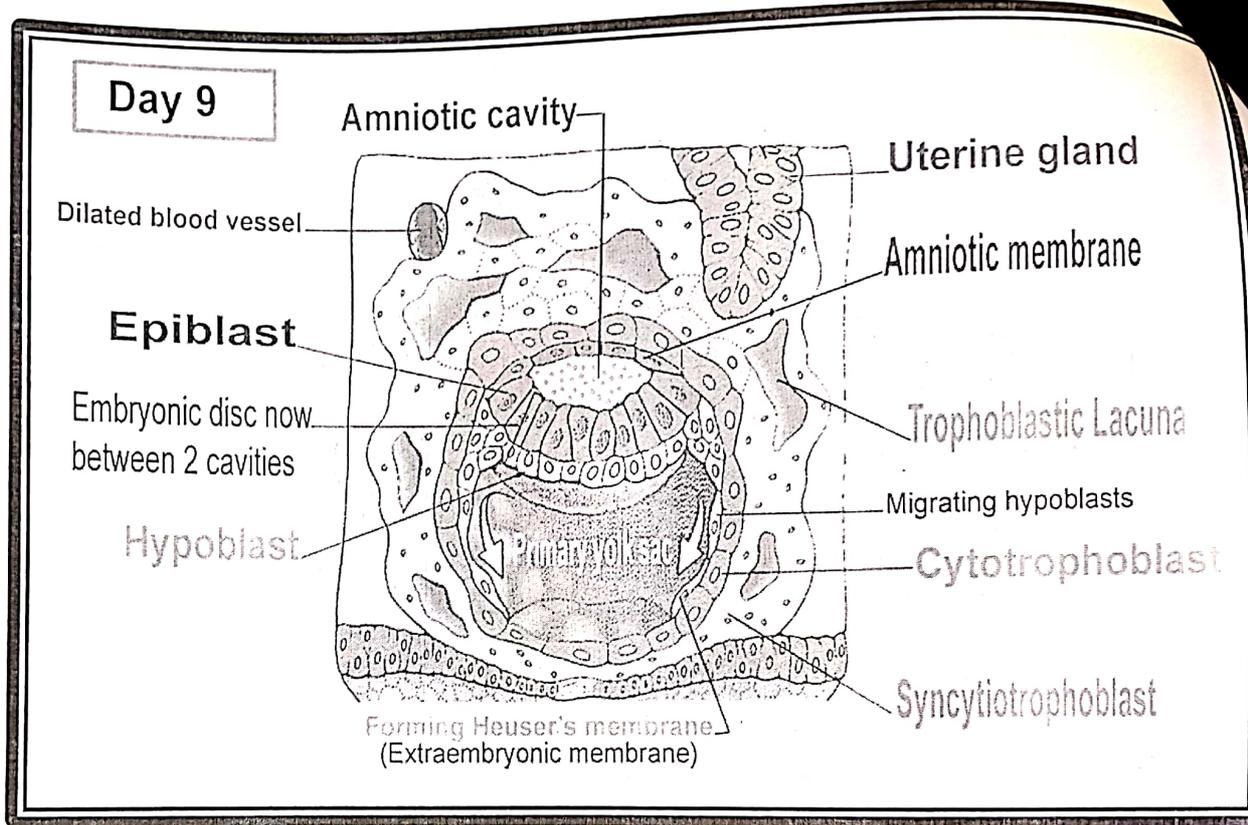


- The syncytiotrophoblasts **invades** the endometrium and bury the blastocyst within the endometrium.
- Syncytiotrophoblast cells secrete **hCG** hormone which, detected in maternal urine (+ve pregnancy test). Interrupts normal sexual cycle.
- This hormone prevents degeneration of the Corpus Luteum and maintains it as **Corpus Luteum of pregnancy**.

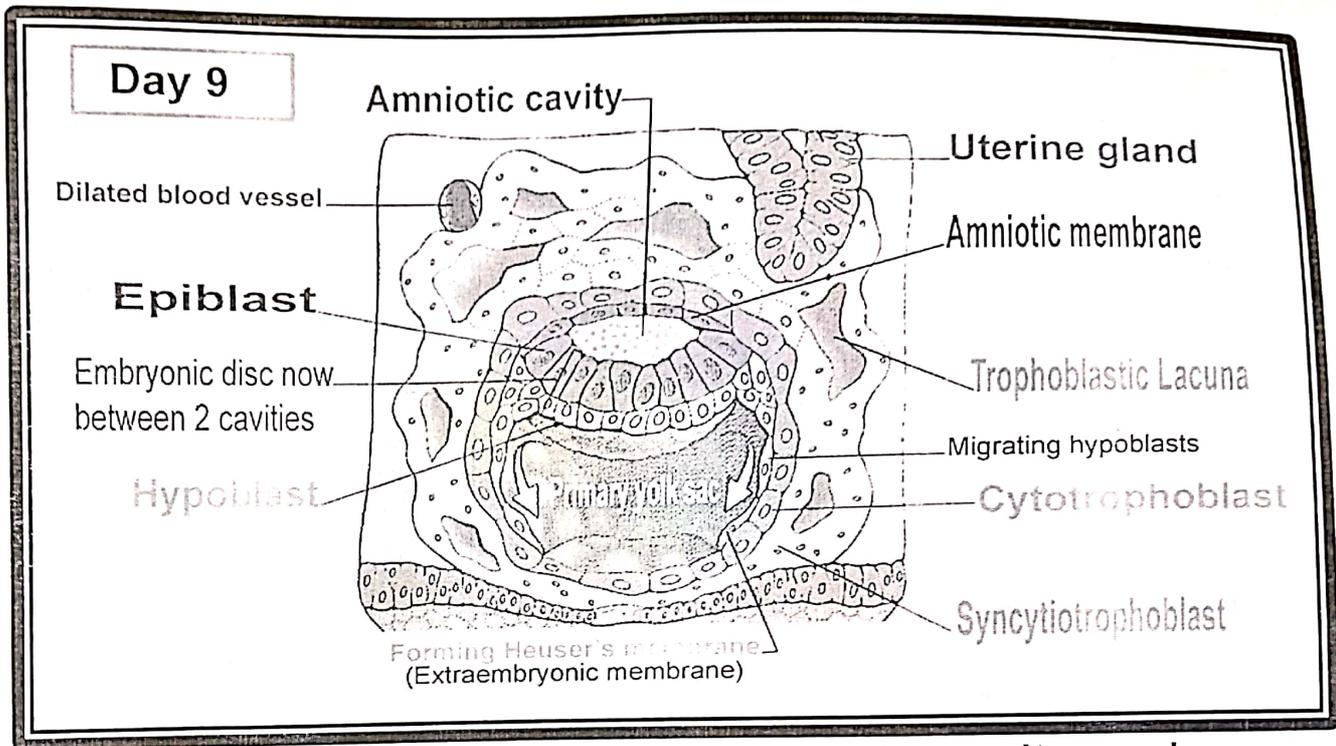


Day 9- A

1. Blastocyst completely implanted in the endometrium.
2. Syncytium covers the whole blastocyst and show small fluid-filled cavities that fuse to form the trophoblastic Lacunae.

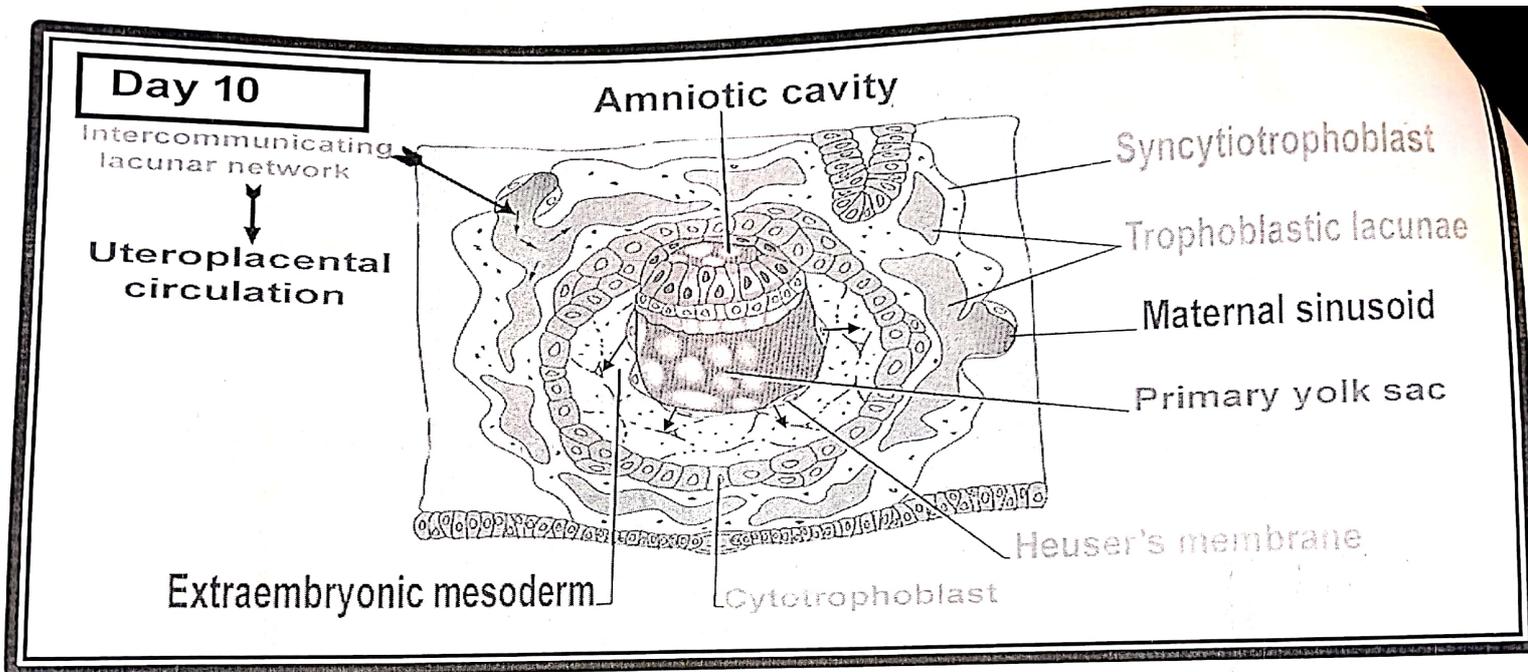


3. Amniotic cavity expands and epiblast cells differentiates into amniotic membrane that lines the amniotic cavity.

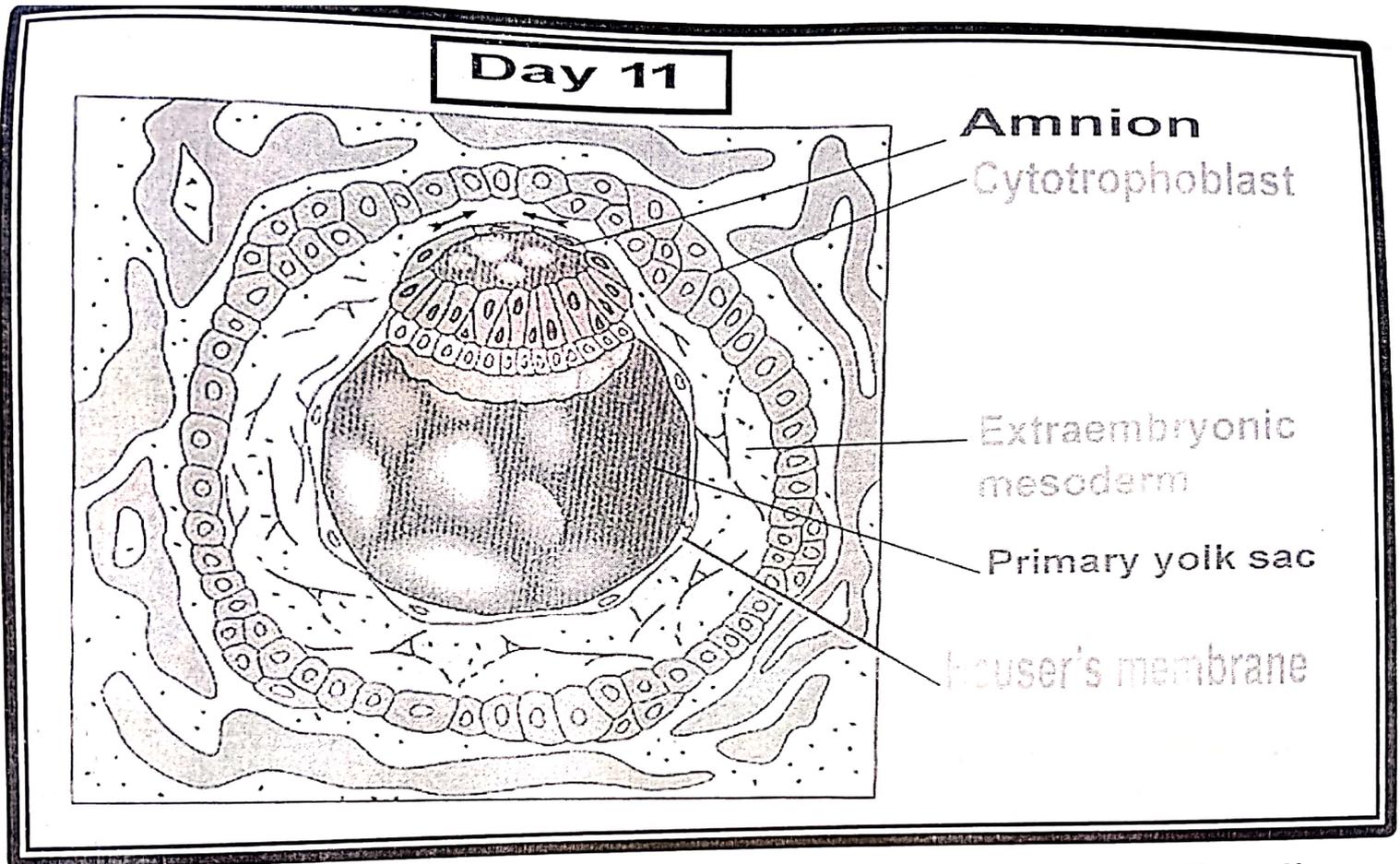


Day 9- C

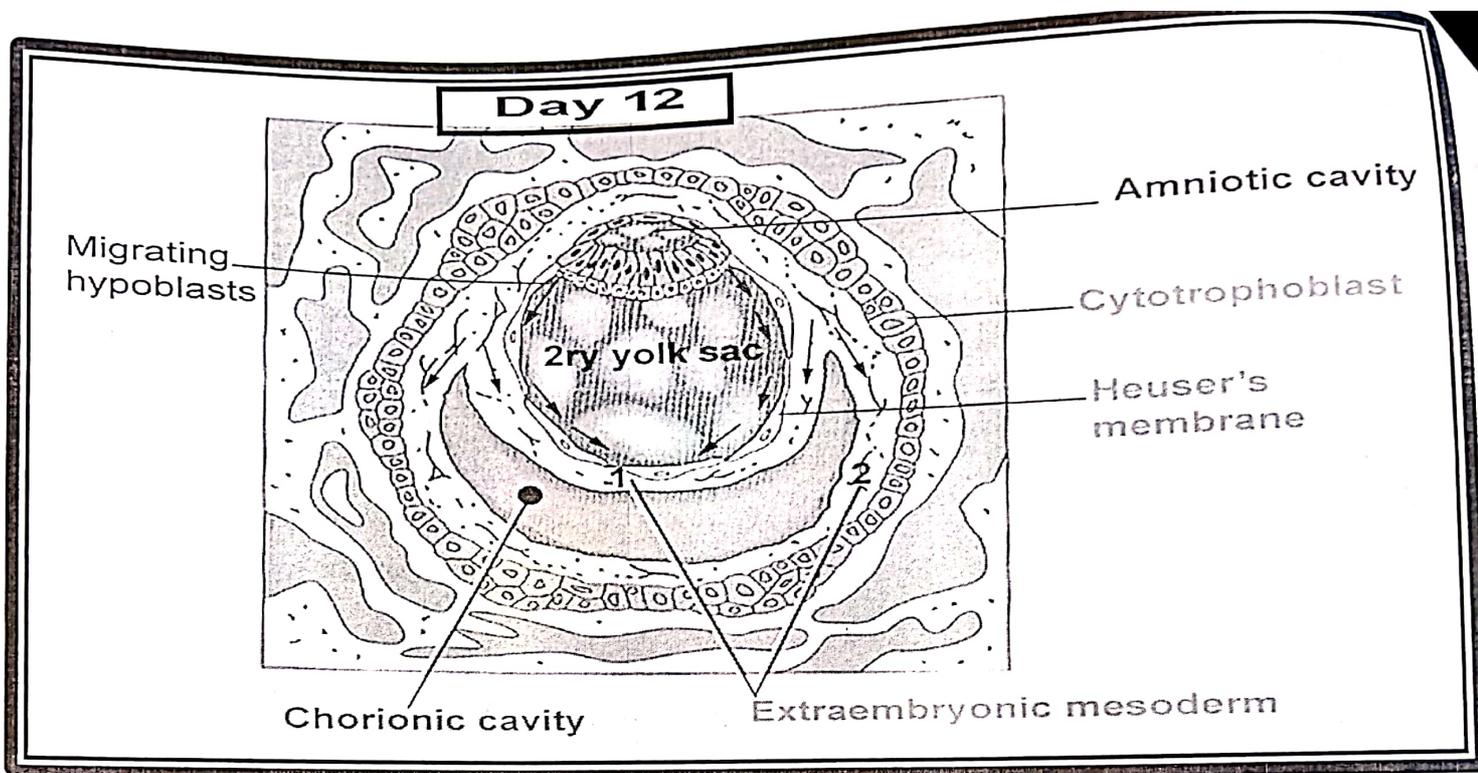
4. Embryonic disc now, lies between Amniotic cavity and Primary Yolk sac.
5. **At the same time**, waves of hypoblast cells migrates down to lines the inner surface of cytotrophoblasts and form the Heuser's membrane. This membrane encloses the primary yolk sac.



1. As the syncytial cells penetrate deeper, they erode the wall of maternal sinusoids and allow maternal blood to flow through the trophoblastic system. This efficient method, establish the **uteroplacental circulation** which, permits the exchange of gases and metabolites by diffusion.
2. Heuser's membrane forms the **extraembryonic mesoderm** that fill the space between it and the cytotrophoblast.

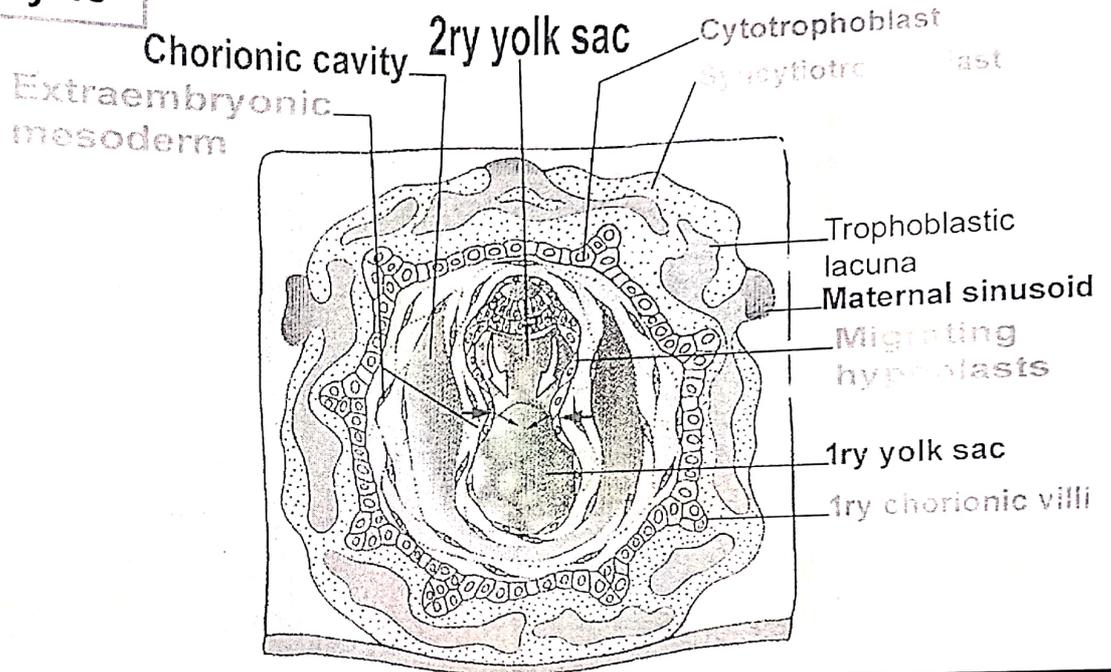


➤ About **Day 11**, the extraembryonic mesoderm fills all the space between cytotrophoblast externally and the Amnion and primary yolk sac internally.



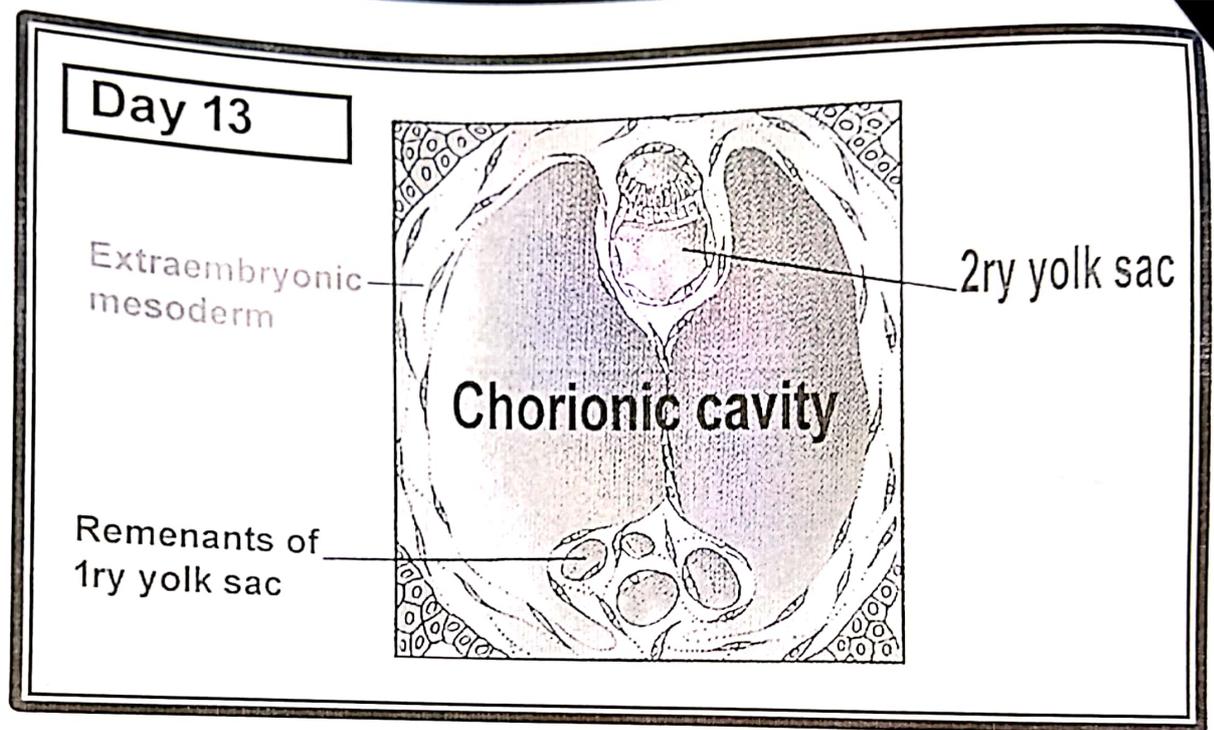
1. Extraembryonic mesoderm splits into two layers:
 - A. One covering Heuser's membrane.
 - B. Other lining cytotrophoblast.
2. The space between the two layers A and B forms the early chorionic cavity.

Day 13



Day 13- A

1. On **Day 13**, a 2nd wave of hypoblast cells migrate along the inside of the Heuser's membrane.
2. These cells proliferate and form the small **2ry yolk sac** by pinching off a large portions of the 1ry yolk sac that finally degenerates.



Day 13- B

3. The 1ry yolk sac will be represented by a small cysts.
4. Subsequently, a large cavity is formed \Rightarrow **chorionic cavity**.

End of 2nd week show:

1. Implantation defect healed.
 2. **Connecting stalk** formed.
 3. 2ry yolk sac formed.
 4. **Chorionic cavity** formed.
 5. 1ry chorionic villi formed.
 6. **Implantation Bleeding** refers to a slight bleeding from the implantation site occurs at the end of 2nd week!
- Women unfamiliar with this incident may interpret as a light menses.

Day 28 of normal cycle!

