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DEPARTMENT: MEDICINE AND SURGERY

MATRIC NO: 18/MHS02/189

COURSE: EMBRYOLOGY (ANA 205)

ASSIGNMENT

Discuss the second week of development

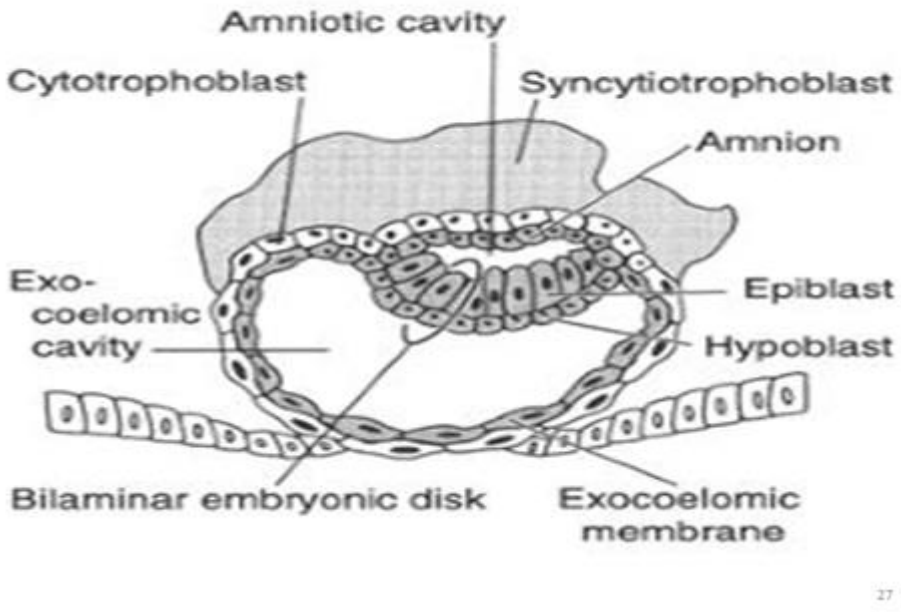
ANSWER

2nd WEEK OF DEVELOPMENT

The following events take place during the 2nd week of development;

1. Completion of implantation of blastocyst;
2. Formation of bilaminar embryonic disc (epiblast and hypoblast);
3. Formation of extra embryonic structures (amniotic cavity, amnion, chorionic sac, umbilical vesicle (yolk sac) and connecting stalk).

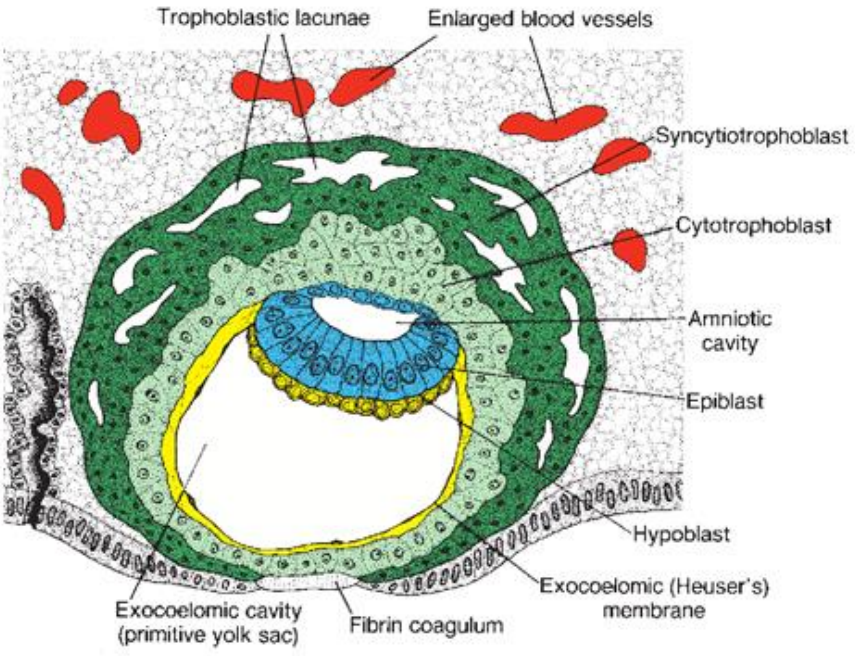
DAY 8



- The blastocyst is partially enroded in the endometrium.
- The syncytiotrophoblast will continue to enrode the endometrium.
- The cells of the cytotrophoblast will continue to divide and migrate to the region of the syncytiotrophoblast.
- The **embryoblast** will differentiate to form cuboidal cells called **hypoblast** and columnar cells called **epiblast.**
- The cells of the **epiblast** that are adjacent to the cytotrophoblast is known as the **amnion or amnioblast.**

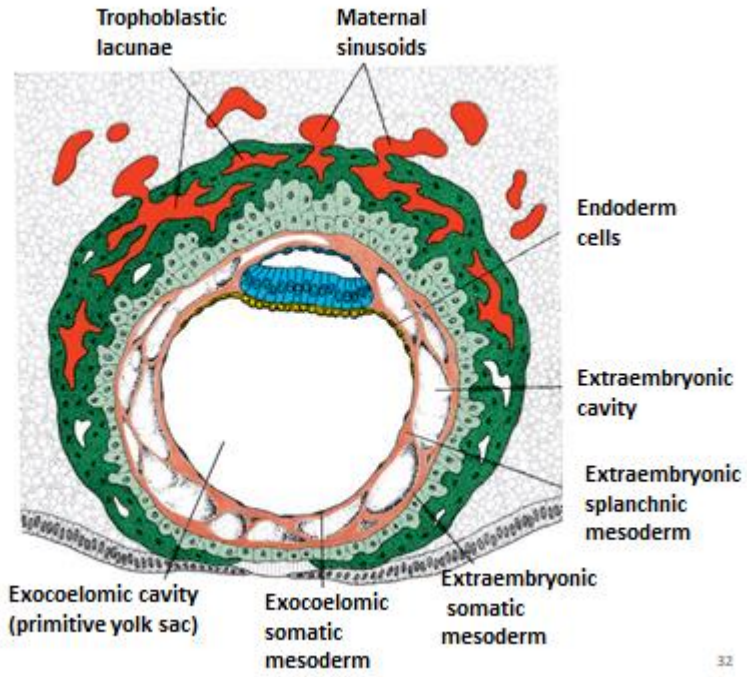
- The cells of the **epiblast** and **amnioblast** surround a cavity known as **amniotic cavity.**
- The cells of the **epiblast** and **hypoblast** will form the **bilaminar germ disc.**

DAY 9



- The blastocyst is completely enroded in the endometrium.
- The syncytiotrophoblast will continue to enrode the endometrium.
- The cells of the cytotrophpoblast will divide and migrate to the region of the syncytiotrophoblast.
- The surface epithelium will be covered by a **fibrin coagulum.**
- The cells of the hypoblast adjacent to the cytotrophoblast will form the **exoceolomic or Heusers membrane.**
- The **exoceolomic or Heusers membrane** and the **hypoblast** will form the lining of the **exoceolomic cavity or primary yolk sac or primary umbilical vesicle.**
- Vacuoles will develop in the region of the syncytiotrophoblast which enlarges to form the **trophoblastic lacunae.**

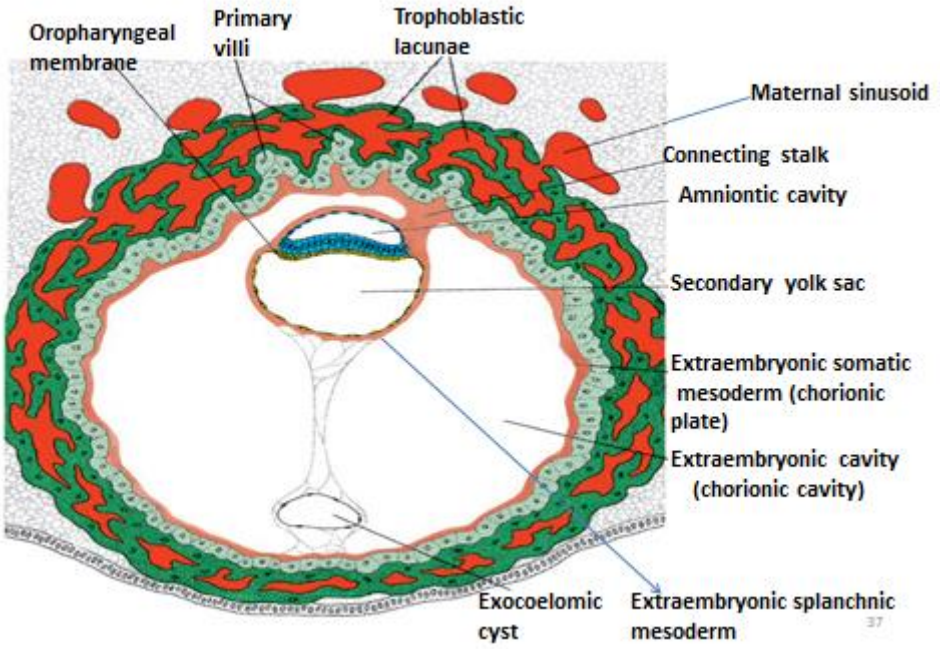
DAY 11-12



- The blastocyst is completely enroded in the endometrium.
- The syncytiotrophoblast will continue to enrode the endometrium.
- The cells of the cytotrophoblast will divide and migrate to the region of the syncytiotrophoblast.
- The **blastocyst** will continue to rupture the **endometrial capillaries** called **sinusoids.**
- The ruptured **sinusoids** will communicate with the **trophoblastic lacunae** to transport nutrients, oxygen and blood between the mother and the embryo.
- At this stage**, a primordial uteroplacenta circulation** is established.
- A new set of cells will grow in the region of the **exoceolomic cavity** and cytotrophoblast to form the **extraembryonic mesoderm.**
- Soon large cavities develop in the region of the **extraembryonic mesoderm** and when this becomes confluent, they form a new space known as **extraembryonic cavity or chorionic cavity or extraembryonic coelom.**
- This space surrounds the **primitive yolk sac and amniotic cavity,** except where the germ disc is connected to the trophoblast by the **connecting stalk.**
- The **extraembryonic mesoderm** lining the cytotrophoblast and amnion is called the **extraembryonic somatic mesoderm.**
- The **extraembryonic mesoderm** lining the yolk sac is called the **extraembryonic splanchnic mesoderm.**
- As the conceptus implants, the **endometrial connective tissue cells** undergoes a transformation known as **decidual reaction.**

- The **endometrium** will swell due to the presence of glycogen and lipids in the cytoplasm to form **decidual cells** whose major function is to provide nutrient for the early embryo and an immunologically privileged site for implantation.

DAY 13



- The blastocyst is completely enroded in the endometrium.
- The syncytiotrophoblast will continue to enrode the endometrium.
- The cells of the cytotrophoblast will divide and migrate to the region of the syncytiotrophoblast.
- Occasionally, bleeding occurs at the implantation site as a result of the increase in blood flow into the lacunar space.
- Cells of the **cytotrophoblast** will proliferate locally and penetrate the **syncytiotrophoblast** to form a cellular column surrounded by a syncytium.
- As development continues, the **hypoblast** will form additional cells in the region of exoceolomic cavity.
- These cells will proliferate and gradually grow to form the **secondary yolk sac or secondary umbilical vesicle** which is smaller than the primary yolk sac.
- During its formation, large portion of the exoceolomic cavity are pinched off to form **exoceolomic cyst** which lies in the region of the extraembryonic cavity.
- The extraembryonic cavity will enlarge and form a large cavity called the chorionic cavity.

- The extraembryonic mesoderm lining the inside of the cytotrophoblast is the **chorionic plate.**
- The extraembryonic cavity is transverse over the chorionic cavity only in the region of the connecting stalk.
- With further development of the blood vessels, the **connecting stalk** becomes the **umbilical cord.**

CLINICAL CORRELATE

Extrauterine Implantation

- Blastocysts may implant outside the uterus
- These implantations result in **ectopic pregnancies**
- 95% to 98% of ectopic implantations occur in the uterine tubes, most often in the **ampulla** and **isthmus**