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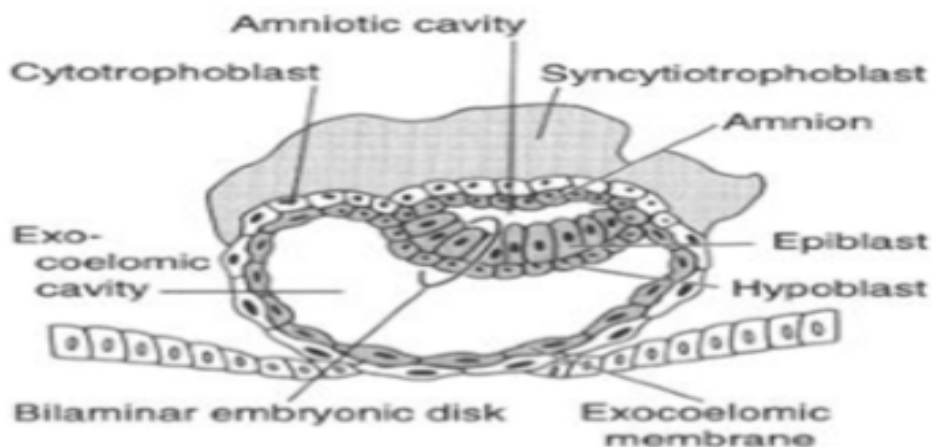
Second week of human development

The second week of human development involves the following things

- ◆ Completion of implantation
- ◆ Formation of bilaminar germ disc
- ◆ Development of extra embryonic structures

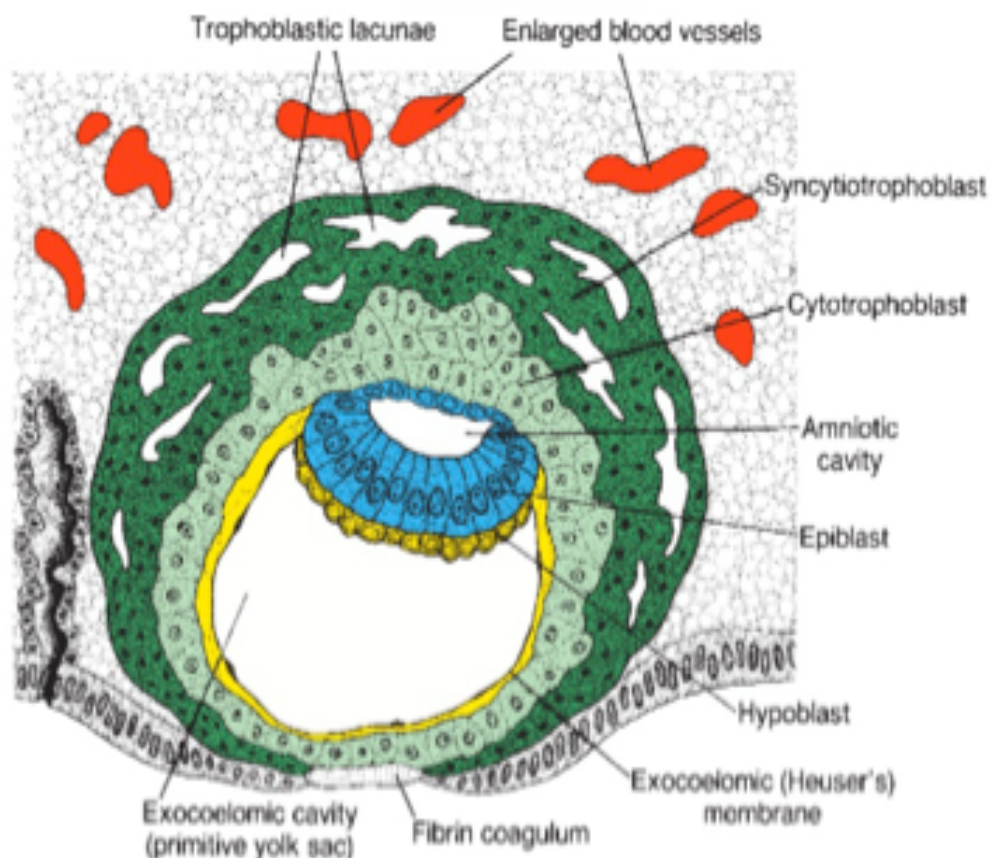
### Day 8

1. The blastocyst is partially embedded in the endometrium.
2. The syncytiotrophoblast continues to erode the endometrium .
3. The cells of the cytotrophoblast continues to divide and migrate deeper into the region of the syncytiotrophoblast.
4. The embryoblast divides into two:  
Hypoblast-which is cuboidal in shape  
Epiblast- which is columnar in shape
5. The cells of the epiblast that are adjacent to the cytotrophoblast are called the amnioblast. The amnioblast surrounds a cavity called the amniotic cavity. The amnion is formed amnioblast.
6. The epiblast and hypoblast give rise to the bilaminar germ disc.



## Day 9

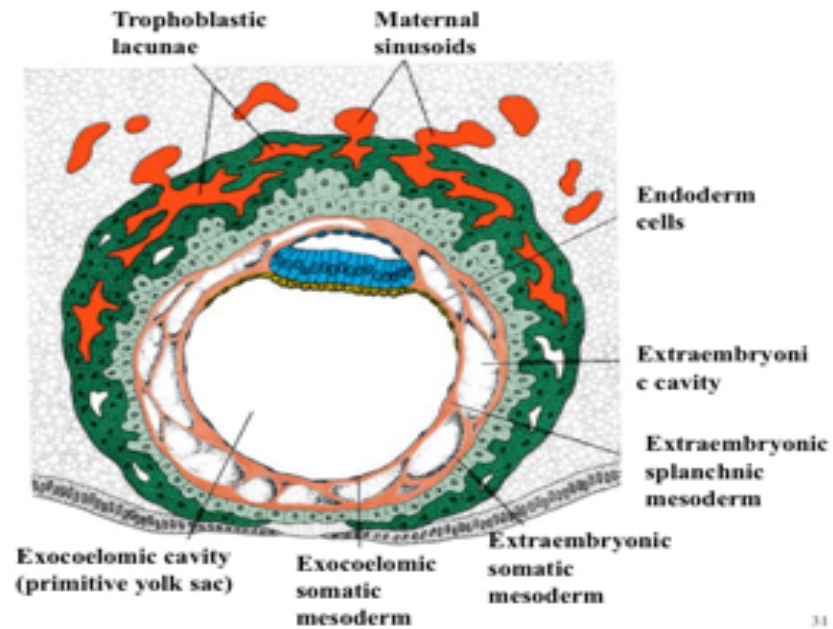
- The blastocyst is deeply embedded in the endometrium. Due to the deep embedding of the blastocyst the surface epithelium is closed by fibrin which is called the fibrin coagulant.
- As development continues there is an appearance of the membrane adjacent to the cytotrophoblast which is called the exocoelomic membrane/ Heusers membrane which surrounds the exocoelomic cavity/ primary yolk sac/ primary umbilical vesicles.
- The syncytiotrophoblast continues to erode the endometrium while the cells of the cytotrophoblast continues to erode the syncytiotrophoblast.
- Vacuoles develop in the region of the syncytiotrophoblast and continue to develop which become trophoblastic lacunae.



### Day 11-12

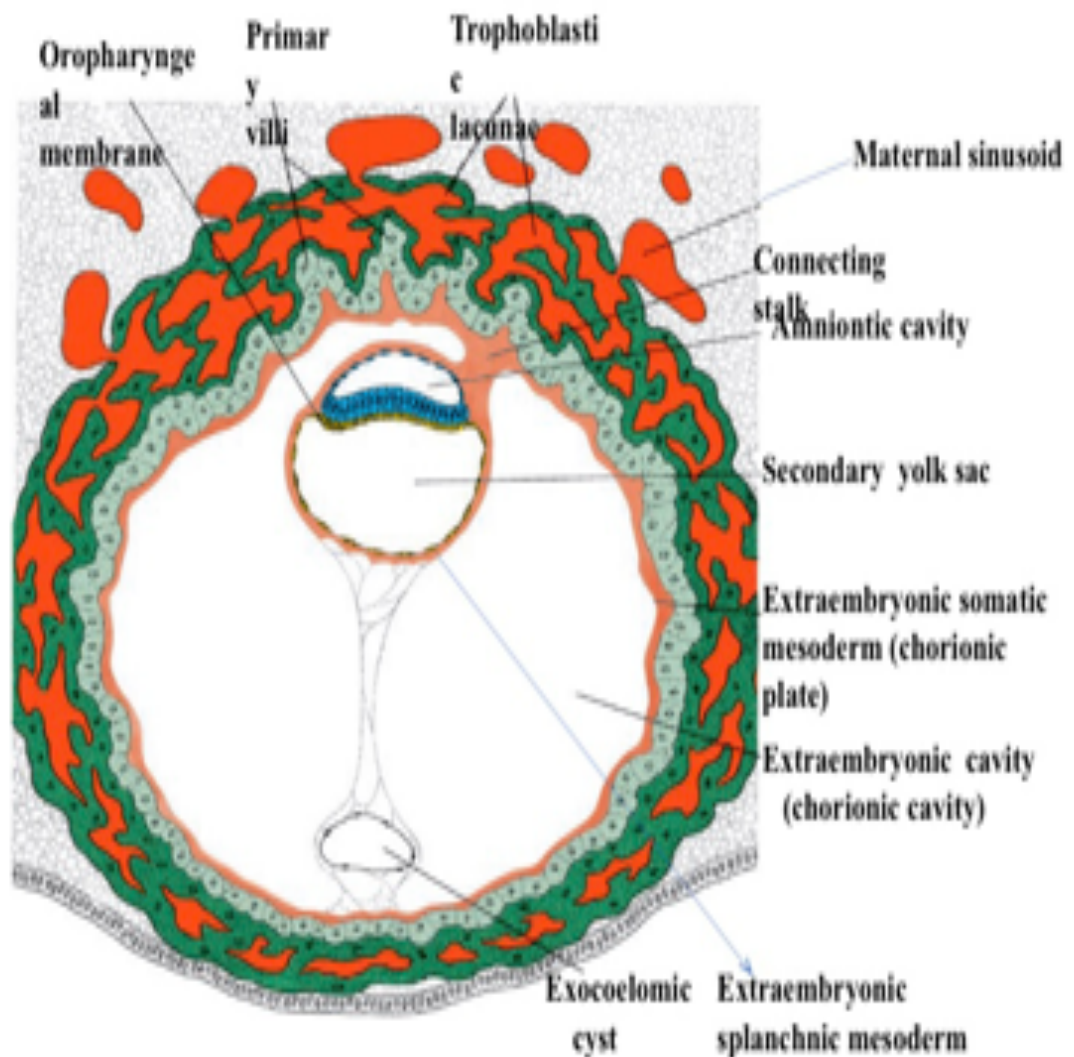
1. The blastocyst is completely embedded in the endometrium.
2. The syncytiotrophoblast continues to erode the endometrium and the cells of the cytotrophoblast continue to divide and migrate into the syncytiotrophoblast.
3. The further movement of the syncytiotrophoblast causes the rupture of capillaries. Ruptured capillaries are called the sinusoids. The rupture of capillaries causes spillage of blood. The sinusoids communicate with the lacunae which causes the spilled blood to enter into the blastocyst. At this stage a primordial uteroplacental circulation is initiated which transports blood, oxygen and nutrients.
4. A space of mesoderm develops between the exocoelomic membrane and the cytotrophoblast, and between the amnioblast and cytotrophoblast whereby the mesoderm contains the entire space where the connecting stalk is found. The mesoderm is called the extra embryonic mesoderm.
5. Cavities develop at the region of the extra embryonic mesoderm which is called the extra embryonic coelomic cavity. The extra embryonic cavity divides the extra embryonic mesoderm into two. The part of the mesoderm that lines the cytotrophoblast is called the extra embryonic somatic mesoderm and the part of the mesoderm that lines the extra embryonic cavity is called the extra embryonic splanchnic mesoderm.
6. A reaction takes place which is called the decidual reaction. During this reaction, glycogen and lipid accumulate in the cytoplasm of the cells and they are known as decidual cells. The primary function of the decidual reaction is to provide nutrition for the early embryo and an

immunologically privileged site for the conceptus.



### Day 13

- ① The extra embryonic cavity enlarges to give rise to the chorionic cavity.
- ② The connecting stalk gives rise to the umbilical cord.
- ③ The cells of the cytotrophoblast become a finger-like process called syncytium (primary villi).
- ④ A portion of the primary yolk sac is spinned up/ removed to form the exocoelomic cyst.
- ⑤ The primary yolk sac reduces to give rise to the secondary yolk sac.



### *Clinical correlates*

The syncytiotrophoblast produces a hormone called the human chorionic gonadotropin hormone which enters the maternal blood. The hormone protects the corpus luteum.

95%-97% of ectopic pregnancies are due to implantation on the ampulla or uterine tubes.

