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**2ND WEEK OF DEVELOPMENT**

 The second week of human development begins from day 8 after fertilization. And it is characterized with the following events;

1. Completion of implantation of the blastocyst
2. Formation of bilaminar embryonic disk(epiblast and hypoblast)
3. Formation of extraembryonic structures(amniotic cavity, amnion, umblical vesicle[yolk sac], connecting stalk and chorionic sac).

**DAY 8**

The following events take place on the 8th day:

* The blastocyst is partially embedded in the endometrium
* The syncytiotrophoblast erodes the endometrium.
* The cytotrophoblast continues to divide and migrates into the region of the syncytiotrophoblast
* The embryoblast differentiates into two layers, which are:
* Hypoblast, made up of cuboidal mass of cells
* Epiblast, made up of columnar mass of cells.

 The cells of the Epiblast adjacent to the cytotrophoblast are called Amnioblasts.

Epiblasts surround the amniotic cavity( a small cavity formed within the epiblast). The Epiblast and the Hypoblast together form the bilaminar germ disc.

**DAY 9**

 The blastocyst is deeply embedded in the endometrium and the penetration defect in the surface epithelium is closed by a Fibrin coagulum. The development of the exocoelomic membrane (Heusers’s membrane) and the exocoelomic cavity occurs along with the development of Trophoblastic Lacunae.

 The cells of the hypoblast adjacent to the cytotrophoblast form the exocoelomic membrane. The cells of the exocoelomic membrane together with the hypoblast form the lining of the exocoelomic cavity (also called the primitive yolk sac or primary umblical vessicle).

**DAY 10-12**

The blastocyst is completely embedded in the endometrium.

 The cells of the syncytiotrophoblast penetrate deeper into the stroma(tissue) and erode the endothelial lining of the endometrial capillaries( This ruptured capillaries are called sinusoids, then blood flows from the endometrium to the blastocyst( It communicates with the embryo) and at this stage a primordial uteroplacenta circulation is established to share nutrients from the mother to the developing embryo.

 A space of mesoderm develops between the exocoelomic membrane and cytotrophoblast and between the epiblast and cytotrophoblast except at the connecting stalk. This mesoderm is called the embryonic mesoderm. In the extra embryonic mesoderm, some cavities develop called the extra embryonic cavities(coelom).

 The extra embryonic somatic mesoderm is the part of the extra embryonic mesoderm that lines the cytotrophoblast ,while the extra embryonic splanchnic mesoderm is the part of the extra embryonic mesoderm that lines the exoceolomic membrane and the amnioblasts. These are the two regions of the mesoderm.

 A decidual reaction takes place. The endometrium swells because of the acquisition of glycogen and lipids. The reaction functions to provide nutrition for the early embro, and an immunologically priviledged site for the conceptus.

**Day 13**

 This is the final day of the 2nd week of development.The cytotrophoblast form primary villi. The connecting stalk gives rise to the future umblical cord.

 The extra embryonic cavity gives rise to the chorionic cavity and the primary yolk sac reduces in size to form the secondary yolk sac( also called the definitive yolk sac or the secondary umbilical vesicle). In humans the yolk sac contains no yolk but is important for the transfer of nutrients between the fetus and mother. During the formation of the secondary yolk sac, large portions of the exocoelomic cavity are pinched off to form exocoelomic cyst.