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Discuss the second week of development.

Three major events take place in the second week

1. Completion of implantation of blastocyst
2. Formation of bilaminar germ disc (Epiblast and hypoblast)
3. Formation of extraembryonic structures.

Day 8

The blastocyst is partially embedded in the uterine mucosa. In the area over the embryoblast

The trophoblast at the embryoblast form two layers;

- a. Inner mononucleated cytotrophoblastic cells that divide by mitosis forming layer b
- b. Outer multinucleated syncytiotrophoblastic zone of fused cells losing their membrane, also called the syncytium.

The inner cell mass cells (the embryoblast) forms the two layers of the bilaminar germ disc;

- a. small cuboidal hypoblastic cells near the blastocoel.
- b. high columnar epiblastic cells. The amniotic cavity develops between these cells.

Amniotic cavity is lined by the epiblast proper cells. The endometrial mucosa is edematous, highly vascular, and secretes glycogen and mucus from its large glands. Epiblast cells adjacent to the cytotrophoblast are called amnioblasts; together with the rest of the epiblast, they line the amniotic cavity. The endometrial stroma adjacent to the implantation site is edematous and highly vascular. The large, tortuous glands secrete abundant glycogen and mucus.

Day 9

The blastocyst embedded more, the small defect closed by fibrin coagulum. Vacuoles in syncytium, fusion form lacunae thus (lacunar stage) of development.

Flat cells originate from the hypoblast forming the exocoelomic Heuser's membrane forming the exocoelomic cavity or called the primitive yolk sac.

Day 11&12

-The blastocyst is completely embedded
defect is almost covered by the mucosal cells.

-The blastocyst now produces a slight protrusion into the lumen of the uterus

The trophoblast is characterized by lacunar spaces in the syncytium that form an intercommunicating network.

This network is particularly evident at the embryonic pole; at the abembryonic pole, the trophoblast still consists mainly of cytotrophoblastic cells.

Human blastocyst of approximately 12 days.

The trophoblastic lacunae at the embryonic pole are in open connection with maternal sinusoids in the endometrial stroma.

Extraembryonic mesoderm proliferates and fills the space between the exocoelomic membrane and the inner aspect of the trophoblast.

-The intercommunicating network of lacunae at the embryonic pole penetrate the maternal sinusoidal capillaries and the maternal blood begin to flow in the trophoblast lacunae establishing the uteroplacental circulation.

In the meantime, a new population of cells appears between the inner surface of the cytotrophoblast and the outer surface of the exocoelomic membrane.

-New cells

originate

from the

yolk sac cells forming the extraembryonic mesoderm.

-Except

connecting stalk region,

cavitations of this mesoderm will form the chorionic cavity or called the extraembryonic

The chorionic cavity divides the extraembryonic mesoderm into two parts;

a. Somatopleuric mesoderm (or called the chorionic plate) lining the cytotrophoblast and the amnion.

b. Splanchnopleuric mesoderm covering the primitive yolk sac.

Decidual reaction occur in the endometrial cells of the uterine mucosa, the mucosal cells become polyhedral, loaded with glycogen and lipid.

Day 13

-Primary villi formation

The hypoblast will form a new cellular layer lining the inside of the exocoelomic membrane. The new cavity formed by these new cells called the secondary or definitive yolk sac. The exocoelomic membrane lining the exocoelomic cavity is largely pinched off forming the exocoelomic cysts that are often seen floating in the chorionic cavity.