

ASSIGNMENT.

DISCUSS THE SECOND WEEK OF DEVELOPMENT

The following events take place during the second week of development:

- Completion of implantation of the blastocyst
- Formation of bilaminar germ disc
- Formation of extra embryonic structures

DAY 8

The blastocyst is partially embedded in the endometrium.

The syncytiotrophoblast will continue to erode the region of the endometrium.

The cytotrophoblast will then divide and migrate towards the region of the syncytiotrophoblast.

Cells of the inner cell mass or embryoblast will differentiate into cell layers:

Small cuboidal cells called **hypoblast**.

High columnar cells called **epiblast**.

The hypoblast and the epiblast together form a flat ovoid disc called the **bilaminar germ disc**.

A small cavity appears within the epiblast and enlarges to form the amniotic cavity.

Epiblast cells adjacent the amniotic cavity are known as **amnioblasts**.

The amnioblasts together with the rest of the epiblast lines the amniotic cavity.

DAY 9

The blastocyst is deeply embedded in the endometrium.

The syncytiotrophoblast will continue to erode the region of the endometrium.

The cytotrophoblast will continue to migrate and divide towards the region of the syncytiotrophoblast.

The surface epithelium is closed by a coagulum called fibrin.

Vacuoles appear in the region of the syncytiotrophoblast which then develops to form the trophoblastic lacunae.

Cells of the hypoblast adjacent the cytotrophoblast form a thin membrane called the exocoelomic membrane or Heuser's membrane.

A cavity is formed between the hypoblast and the exocoelomic membrane known as the exocoelomic cavity or primary yolk sac or primary umbilical vesicle.

DAY 10-12

The blastocyst is completely embedded in the endometrium.

The syncytiotrophoblast will continue erode the region the region of the endometrium.

The cytotrophoblast will continue to divide and migrate towards the region of the syncytiotrophoblast.

Ruptured endometrial capillaries are called sinusoids.

The trophoblastic lacunae begins to communicate with the sinusoids, and maternal blood enters the lacunae system.

At this stage a primordial uteroplacenta circulation is established.

New population of cells begins to appear in the internal surface of the cytotrophoblast and outer surface of the exocoelomic cavity.

These cells which develop from the yolk sac will give rise to a loose fine connective tissue known as extra embryonic mesoderm.

Large cavities develop in the extraembryonic mesoderm and they form large spaces known as extraembryonic cavity or extra embryonic coelom.

The lining covering the cytotrophoblast and the amnion is the extra embryonic somatic mesoderm, which also forms the connecting stalk.

The lining covering the yolk sac is the extra embryonic splanchnic mesoderm.

As the conceptus implants the cells of the endometrium undergoes a transformation known as decidual reaction.

Decidual reaction this is the process by which the cells of the endometrium swell due to accumulation of glycogen and lipid in their cytoplasm hence they are known as decidual cells.

DAY 13

The primary yolk sac becomes reduced in size and is known as the secondary yolk sac or definitive yolk sac or secondary umbilical vesicle.

In humans the yolk sac does not contain yolk but is important for the transfer of nutrients between the fetus and the mother.

Large portion of exocoelomic cavity are pinched off to form the exocoelomic cysts.

The exocoelomic cysts are often found in the extraembryonic cavity or chorionic cavity.

The extraembryonic cavity expands and forms a large cavity called the chorionic cavity, the extraembryonic mesoderm lining the inside of the cytotrophoblast is then known as chorionic plate.

The only place where the extraembryonic mesoderm traverses the chorionic plate is the connecting stalk.

With development of blood vessel the connecting stalk then becomes the **umbilical cord**.

CLINICAL CORRELATE

The syncytiotrophoblast produces a hormone called the human chorionic gonadotrophin which enters the maternal blood through the lacunae keeps the corpus luteum secreting estrogens and progesterone.

The human chorionic gonadotrophin maintains the hormonal activity of the corpus luteum in the ovary.

Extrauterine implantation

Blastocysts may implant outside the uterus.

These implantations result in ectopic pregnancies, 95%-98% of the ectopic implantations occur in the uterine tubes most often the ampulla and isthmus.