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**Matric no: 18/MHS01/261**

**Dept: Medicine and surgery**

**Level: 200lv**

**Anatomy assignment**

# 2nd week of development

The following events take place:

* Completion of implantation of the blastocyst
* Formation of bilaminar embryonic disc(epiblast and hypoblast)
* Formation of extraembryonic structures e.g. amniotic cavity, amnion, umbilical vesicle (yolk sac), chorionic sac, and connecting stalk

1. At the eighth day of development, the blastocyst is partially embedded in the endometrium; syncytiotrophoblast continues its invasion of the endometrium, thereby eroding endometrial blood vessels and endometrial glands
2. More cells in the cytotrophoblast divide and move into the syncytiotrophoblast, where they fuse and lose their individual cell membranes

Cells of the embryoblast differentiate into 2 layers:

* the hypoblast layer, which is made up of small cuboidal cells
* the epiblast layer which is made up of high columnar cells

The hypoblast and epiblast layers together gives rise to the bilaminar germ disc.

Epiblast cells which are adjacent to the cytotrophoblast are called Amnioblasts, and amnioblasts together with the rest of the epiblast, line the amniotic cavity. The endometrium adjacent to the implantation site is edematous

**NINTH DAY**

The blastocyte is still not fully embedded into the endometrium and the surface epithelium is closed by a coagulum called fibrin

Vacuoles develop at the region of the trophoblast and they fuse to form lager lacunae, this is known as the lacunar stage

The cells of the hypoblast adjacent to the cytotrophoblast develop a thin membrane called the exocoelomic/ Heuser’s membrane, this membrane lines the inner surface of the cytotrophoblast, The exocoelomic (Heuser’s) membrane together with the hypoblast surrounds a cavity called exocoelomic cavity, or primitive yolk sac or primary umbilical vesicle

**ELEVENTH –TWELTH DAY**

Blastocyte is completely embedded in the endometrium and there is presence of ruptured capillaries or sinusoids responsible for transporting blood, oxygen, etc.

A space of mesoderm develops between the region of the cytotrophoblast and the outer surface of the exocoelomic cavity and between amnioblast and cytotrophoblast (except at the point where we have the connective stalk). The space is called extraembryonic mesoderm.

Inside the extraembryonic mesoderm are cavities which develop to form a new space called extraembryonic cavity or extraembryonic coelom

The part of the mesoderm that lies closer to the region of the cytotrophoblast is called extraembryonic somatic mesoderm. The part of the mesoderm that lies closer to the exocoelomic membrane and amnioblast is called extraembryonic splanchnic mesoderm

As the conceptus implants, the endometrial connective tissue cells undergo a decidual reaction. During this transformation, the cells of the endometrium swell because of the accumulation of glycogen and lipid in their cytoplasm, and they are called as decidual cells and primary function of the decidual reaction is to provide nutrition for the early embryo and an immunologically privileged site for the conceptus

**THIRTEENTH DAY**

The surface defect in the endometrium has been completely covered by the surface epithelium and cells of the cytotrophoblast proliferate locally and penetrate into the syncytiotrophoblast, forming cellular columns surrounded by syncytium which looks like a villi and are called primary villi

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

During yolk sac formation, large portions of the exocoelomic cavity are pinched off to form exocoelomic cysts which are often found in the extraembryonic cavity or chorionic cavity or extraembryonic coelom

The extraembryonic cavity enlarges and gives rise to a larger cavity called chorionic cavity and the extraembryonic mesoderm lining the inside of the cytotrophoblast is then known as the chorionic plate

The connecting stalk later becomes the umblical cord.