**SECOND WEEK OF DEVELOPMENT**

Three main events occur during the second week of development, they are:

1. Completion of Implantation of Blastocyst.

2. Formation of Bi-Laminar germ disc.

3. Formation of extra embryonic structures.

**DAY 8**

The Blastocyst is partially embedded in the endometrium; the synctiotrophoblast continues invading the endometrium which causes eroding of blood vessels and some endometrial glands. The cytotrophoblast also migrates into the region of the synctiotrophoblast. The cells of the embryoblast differentiate into two layers:

A. Epiblast: cell mass made up of columnar cells and is found adjacent to the amniotic cavity.

B. Hypoblast: cell mass made up of cuboidal cells and is found adjacent to the blastocytic cavity.

Together these layers give the bilaminar germ disc, a cavity forms within the epiblast which becomes bigger over time and is known as amniotic cavity, cells of the epiblast adjacent to the cystotrophoblast are known as amnioblasts and line the amniotic cavity together with other cells of the epiblast. The region of the endometrium adjacent to the implantation site is edematous and highly vascularized.

**DAY 9**

The Blastocyst is deeply embedded in the endometrium. Surface epithelium is closed by the fibrin coagulum. As development continues, development of another membrane which lies adjacent to the cytotrophoblast occurs and is known as Exocoelomic membrane and surrounds a cavity known as exocoelomic cavity. Vacuoles develop in the region of the syncytiotrophoblast, become larger, fuse and are called Lacunae.

**DAY 11-12**

Blastocyst is completely embedded in the endometrium. Synctiotrophoblast continues to erode the endometrium and cytotrophoblast keeps dividing and migrating into the region of synctiotrophoblast, erosion of syncytiotrophoblast destroys some capillaries and the ruptured capillaries are known as sinusoids. They communicate with the trophoblastic lacunae forming a primordial utero-placenta circulation. A space of mesoderm develops between the region of cytotrophoblast and amnioblast & cytotrophoblast and exocoelomic membrane known as extra embryonic mesoderm. In the extra embryonic mesoderm, there is development of some cavities, they are known as extra embryonic cavity. The cavity divides the mesoderm into two parts. The part which lines the cytotrophoblast is known as extra embryonic somatic mesoderm. The part lining the exocoelomic membrane and amnioblast is known as extra embryonic splanchic mesoderm. Development continues and a reaction known as decidual reaction takes place. The cells of the endometrium swell due to accumulation of glycogen and lipid in their cytoplasm and 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**

The surface defect in the endometrium has been completely covered by the surface epithelium. Ocassionally bleeding occurs at the implantation site as a result of increased blood flow into lacunar spaces. Cells of the cytotrophoblast acquire synctium and are referred to as primary villi. The connective stalk gives rise to the primordial umbilical cord. Extra embryonic cavity enlarges and gives rise to a larger cavity known as chorionic cavity. Exocoelomic cavity becomes the secondary yolk sac becoming smaller it is also known as secondary umbilical cavity.