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**Department: Medicine and Surgery**

**Course Embryology**

**Assignment Question:** Discuss second week of embryonic development

**Second Week Of Embryonic Development**

After fertilization, Cleavage,Formation of blastomere,Blastocyst formation and the start of implantation that happened in the first week of embryonic development:The below processes happened in the second week of embryonic development:

1)Completion of implantation

2)Formation Bilaminar Embryonic disc

3) Development of Extraembrayonic structures

**\*Day Eight of Embryonic development**

At day eight of embryonic development, the blastocyst is partially embedded in the endometrium.The syncytiotrophoblast continue its invasion into the endometrium.Cytotrophoblast continue to divide and migrate into the region of syncytiotrophoblast.As development continue,the embryoblast or the inner cell mass of the blastocyst divide into two layers which include:The Epiblast layer which contain small cuboidal cells and Layer of Hypoblast which contain columnar cells.The cells of the epiblast close to the region of cytotrophoblast are called amnioblast.The Layer of epiblast and hypoblast form a flat ovoid disc called bilaminar embryonic disc. The amnioblast and the remaining cells of epiblast line the amniotic cavity .

**\*Day Nine of embryonic development**

At day nine of embryonic development, the blastocyst is deeply embedded in the endometrium. The penetration defects of the endometrium is closed by fibrin coagulum.As development continues,a membrane is developed adjacent to cytotrophoblast,the membrane is called exocoelomic membrane. The exocoelomic membrane together with hypoblast for exocoelomic cavity or primitive yolk sac or primary umbilical vesicles. A vacuole start to develop at the region of syncytiotrophoblast, those vacoule develop into trophoblastic lacuna.

**\*Day eleven to twelve of embryonic development**

The blastocyst is completely embedded in the endometrium during these days of embryonic development. As the blastocyst continue to enrode into the region of endometrium,uterine blood vessels are ruptured and as result blood split on the trophoblastic lacuna found at the region of syncytiotrophoblast.Communication is established between the ruptured blood vessels and the trophoblastic lacuna and as a result primordial uroplacenta circulation is established.As maternal blood enters into the lacuna,it takes oxygen and nutrients to the developing human.

A space of mesoderm is developed in the region of cytotrophoblast with amnioblast and cytotrophoblast with exocoelomic membrane. The space is called extraembryonic mesoderm, the mesoderm covers all layers except the connecting stalk. As development continues cavities develop in the extra embryonic mesoderm. The cavity is called extra embryonic cavity. These cavities divide the mesoderm into two portion, before and after the cavities. The part of the mesoderm close to cytotrophoblast is referred to as extra embryonic somatic mesoderm while the part of the mesoderm that lies between amnioblast and exocoelomic membrane with the cavities is called extra embryonic splanchnic mesoderm.

As development continues, a decidual reaction take place where the endometrium swells as a result of the accumulation of glycoprotein and lipid in their cytoplasm. The main function of this reaction is to provide nutrition and immunity to the developing embryo.

**\*Day thirteen of embryonic development**

Thecells of cytotrophoblast acquire synctium which extend into the region of syncytiotrophoblast.The connecting stalk give rise to umbilical cord.The extra embryonic cavity becomes enlarge and give rise to chorionic cavity.Portion of primary yolk sac is reduced to form secondary yolk sac .The portion reduced is referred to as extra exocoelomic cyst.