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MEDICINE AND SURGERY

### SECOND WEEK OF EMBRYONIC DEVELOPMENT.

Three major events take place during the 2<sup>nd</sup> week of embryonic development. And they are as follows;

1. Completion of implantation of blastocyst
2. Formation of bilaminar embryonic disc
3. Formation of embryonic structures such as the amniotic cavity, yolk sac, connecting stalk and chorionic stalk.

By the 8<sup>th</sup> day of embryonic development, the blastocyst is partially and slowly embedded in the endometrium and the syncytiotrophoblast continues to erode the endometrium. The cells in the cytotrophoblast divide and migrate into the syncytiotrophoblast.

The embryoblast then differentiates into two layers the hypoblast layer which is made up of small cuboidal cells and the epiblast which is made up of high columnal cells. This two layers together form a bilaminar disc.

By the end of the 9<sup>th</sup> day, the blastocyst is more embedded in the endometrium and the penetration defect of the surface epithelium is closed by a coagulum called fibrin. A larger lacuna is formed as well as a membrane called exocoelomic membrane. This membrane formed as well as the hydroblasts forms the lining of the exocoelomic cavity or primitive yolk sac or primary umbilical vesicle.

By the 11<sup>th</sup>-12<sup>th</sup> day, the blastocyst is completely embedded in the endometrium and the surface epithelium almost covers the original defect in the uterine wall. The blastocyst then produces a protrusion in the lumen of the uterus. The cells of the syncytiotrophoblast penetrate deeper into the tissue and erode the

endothelial lining of the endometrial capillaries, a new population of cells appear between the inner surface of the cytotrophoblast and the outer layer of the exocoelomic cavity. Soon large cavities develop in the extra embryonic mesoderm and when they become confluent they form the chorionic cavity. As the conceptus implants, the endometrium connective tissue cells undergo a reaction called DECIDUAL reaction. During this transformation the cells of the endometrium swell because the accumulation of glycogen and lipid in the cytoplasm and they are known as decidual cells and the primary function of this decidual reaction is to provide nutrition for the early embryo and an immunologically privileged site for the conceptus.

At the 13<sup>th</sup> day of embryonic development, the surface defect in the endometrium has been completely covered by the surface epithelium. Occasionally bleeding occurs at the site of implantation as a result of increased blood flow into the lacunar spaces.

Cells of the cytotrophoblast proliferate locally and penetrate into the syncytiotrophoblast forming cellular columns called the primary villi surrounded by syncytium.

The primary yolk sac reduces in size and is known as the secondary yolk sac or the secondary umbilical vesicle. Meanwhile the extraembryonic coelom expands and forms a large cavity called the chorionic cavity. The only place where extraembryonic mesoderm traverses the chorionic cavity is in the connecting stalk and this becomes the umbilical cord when blood vessels develop.