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LEVEL: 200L

COURSE: EMBRYOLOGY

MATRIC NO.: 18/MHS01/128

DEPARTMENT: MEDICINE AND SURGERY

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ASSIGNMENT: Discuss the second week of development

There are three major events that take place during the second week of development. They include: completion of implantation, formation of bilaminar germ disc and development of extra embryonic structure.

DAY8: The blastocyst is partially embedded in the endometrium and the cells of the syncytiotrophoblast continue to erode the endometrium. The cells of the embryoblast divide into two layers; the hypoblast layer (consisting of cuboidal cells), the epiblast layer (consisting of columnar cells). The epiblast is adjacent to the amniotic cavity. These two layers form the Bilaminar embryonic disc. At the same time, a small cavity appears within the epiblast which enlarges to form amniotic cavity.

DAY9: The blastocyst is more deeply embedded in the endometrium. The penetration defect in the surface epithelium is closed by a coagulum called fibrin. Vacuoles develop in the syncytiotrophoblast which becomes bigger with time and are called Trophoblastic Lacunae. An exoceolomic membrane lines the cytotrophoblast. It is also called Heuser's membrane. This membrane together with hypoblast forms the lining of the exoceolomic cavity or primitive yolk sac or primary umbilical vesicle.

DAY11-12: The blastocyst becomes completely embedded in the endometrium. The syncytiotrophoblast continues to erode the endometrium. Trophoblastic lacunae communicate with sinusoids which are ruptured endometrial capillaries to transport maternal blood into the lacunar system. This establishes the Primordial Utroplacental Circulation. This allows oxygen and nutritive substances to be available to the embryo. A space of mesoderm develops between the region of the cytotrophoblast and the exoceolomic membrane and between the cytotrophoblast and the amnioblast except where the connecting stalk is located. This space is called extraembryonic mesoderm. Large vacuoles divide this extraembryonic mesoderm into two parts: Extraembryonic somatic mesoderm and extraembryonic splanchnic mesoderm. The endometrial connective tissue cells undergo a transformation called Decidual reaction as the conceptus implants. During which the cells of the endometrium walls becomes accumulated with glycogen and lipid and are known as Decidual cells. This reaction provides nutrition for the early embryo.

DAY13: The surface defect in the endometrium has been completely covered by the surface epithelium. The cytotrophoblast acquire syncytium known as Primary villi. The hypoblast produces additional cells that migrate along the inside of the exoceolomic membrane. These cells increase in number and gradually form a new cavity within the exoceolomic cavity known as the secondary yolk sac. During which large portions of the exoceolomic cavity are pinched of to form exoceolomic cysts. The extraembryonic coleom becomes enlarge and forms chorionic cavity between the extraembryonic somatic mesoderm and the extraembryonic splanchnic mesoderm. the extraembryonic mesoderm lining the inside of the cytotrophoblast is then known as the Chorionic plate. With development of blood vessels, the connecting stalk become the umbilical cord.