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MATRIC NUMBER: 18/mhs01/223

DEPARTMENT: Medicine and Surgery

LEVEL: 200 level

COURSE: Embryology

ASSIGNMENT: Describe the second week of development.

Three events take place in the second week;

1. Completion of blastocyst implantation.
2. Formation of bilaminar embryonic disc.
3. Formation of extraembryonic structure (amniotic cavity, amnion, umbilical vesicle, connecting stalk, chorionic sac.

DAY 8

1. Blastocyst is partially embedded in the endometrium.
2. Syncytiotrophoblast invades endometrium, eroding endometrial blood vessels and glands.
3. Cytotrophoblast cells divide and migrate into syncytiotrophoblast region
4. Embryoblast differentiate into two layers; hypoblast which are cuboidal cells and epiblast which are columnar cells. The part of epiblast near to cytotrophoblast forms amnioblast.
5. The hypoblast and epiblast fuse to form bilaminar embryonic disc. A cavity appears within the epiblast and enlarges to form amniotic cavity.

DAY 9

1. Blastocyst is deeply embedded in endometrium causing surface epithelium to be closed by coagulum called fibrin.
2. Syncytiotrophoblast invades endometrium, eroding endometrial blood vessels and glands.
3. Cytotrophoblast cells divide and migrate into syncytiotrophoblast region.
4. Vacuoles appear at syncytiotrophoblast and fuse forming trophoblastic lacunae (lacunar stage)
5. Cells of hypoblast form exocoelomic/Heuser's membrane which are adjacent to cytotrophoblast. This membrane lines the exocoelomic cavity/ primitive yolk sac/ primary umbilical vesicle.

DAY 11th- 12th

1. Blastocyst is completely embedded in endometrium causing surface epithelium to entirely cover original defect in uterine wall.
2. Cells of syncytiotrophoblast penetrate deeper into endometrium and erode endometrial capillaries. These ruptured capillaries are called sinusoids.

3. The lacunae then communicate with sinusoid enabling maternal blood to enter lacunar system establishing primordial uteroplacental circulation which provides oxygen and nutritive substances to embryo.
4. Extraembryonic mesoderm is formed between inner surface of cytotrophoblast and outer surface of exocoelomic cavity. Large cavities then develop in mesoderm called extraembryonic cavity/ coelom or chorionic cavity. Mesoderm lining the cytotrophoblast is extraembryonic somatic mesoderm while the one lining exocoelomic cavity is extraembryonic splanchnic mesoderm.
5. As the implantation occurs, endometrial connective tissue undergoes transformation, that is, decidual reaction during which cells of endometrium swell due to accumulation of glycogen and lipids in cytoplasm (decidual cells). This reaction provides nutrition for early embryo and immunologically privileged site for conceptus.

DAY 13th

1. Surface epithelium is completely covered. There is occasional bleeding due to increased blood flow into lacunar.
2. Cytotrophoblast proliferate and penetrate syncytiotrophoblast forming cellular columns (primary villi) covered by syncytium.
3. Exocoelomic cavity/ primary yolk sac reduces in size to form secondary yolk sac or definitive yolk sac or secondary umbilical vesicle.
4. A portion of exocoelomic cavity is pinched off to form exocoelomic cyst which is in extraembryonic cavity/ coelom or chorionic cavity.
5. Extraembryonic coelom/ cavity expands to form chorionic cavity.
6. Extraembryonic somatic mesoderm becomes chorionic plate.
7. A connecting stalk, links chorionic cavity to extraembryonic mesoderm. This stalk becomes umbilical cord.