

**NAME: OKON FAVOUR IME**

**MATRIC NO: 18/MHS01/268**

**DEPARTMENT: MEDICINE AND SURGERY**

**LEVEL: 200**

**COURSE: EMBRYOLOGY**

Discuss the 2<sup>nd</sup> week of development

During this week 3 major events take place

1. Completion of implantation of the blastocyte
2. Formation of a bi-laminar germ disc
3. Formation of extra embryonic structures

On day8, the blastocyst is partially embedded in the endometrial. The syncytiotrophoblast will continue to erode the region of endometrial. The cytotrophoblast will continue to divide and migrate into syncytiotrophoblast. Inner cell mass called Embryoblast divides into 2 cells; the cuboidal cells called hypoblast and the columnar cells called epiblast. Cells of epiblast that lines adjacent to the region of the cytotrophoblast is called Aniblast, which form cells called anion that surround a cavity called Amniotic cavity. Cells of epiblast and hypoblast combine to form bi-laminar germ disc.

On day9, the blastocyst is deeply embedded in the endometrial. The surface epithelium (small opening) is closed by a fibrin coagulum. As development continues another membrane is formed called Exocoelemic membrane. There is a cavity between the exocoelemic membrane and hypoblast called Exocoelemic cavity or primary yolk sac or primary umbilical vessels; they fuse to form vacuoles which develop region of our syncytiotrophoblast and gradually becoming bigger called lacuna trophoblastic lacunae.

On day11-12, the blastocyst is completely embedded in endometrial and the surface epithelium almost entirely covers the original defect in the uterine wall. The ruptured endometrial capillaries are referred to as sinusoids and maternal blood enters the lacunae system. The ruptured sinusoids communicate with trophoblastic lacunae and at this stage a primordial utero placental circulation is established helping to transfer nutritive substances and oxygen to the developing embryo. A space of mesoderm develops within the inner surface of cytotrophoblast and outer surface of exocoelemic cavity. These cells which are derived from yolk sac cells form a fine, loose connective tissue called extra embryonic mesoderm. Inside the extra embryonic mesoderm there are some large cavities developed and they are called extra embryonic cavities or extra embryonic coelum. This cavity divides the mesoderm into 2parts

- i. The part of the mesoderm that lines the region of the exocoelemic membrane is called extra embryonic splanchnic or visceral mesoderm
- ii. The part of the mesoderm that lines adjacent to the region of the cytotrophoblast is the extra embryonic somatic mesoderm

The extra embryonic cavity is between the extra embryonic somatic mesoderm and the extra embryonic splanchnic mesoderm. As conceptus implants, the endometrial connective tissue cells undergo a transformation called decidual reaction. During this

transformation, the cells of the endometrial swell because of the accumulation of glycogen and lipid in their cytoplasm and they 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.

On day13, the surface defect has been completely covered by the surface epithelium. The connecting stalk gives rise to plasmodium or future umbilical cord. The extra embryonic cavity/ coelum become enlarged and give birth to a larger cavity called chorionic cavity. The name changes from primary yolk sac but as development continues it becomes smaller and so therefore becomes secondary yolk sac. A portion of the secondary yolk sac is removed to form a cyst called Exocoelemic cyst. In humans the yolk sac contains no yolk but is important for transfer of nutrients between fetus and mother.