**NAME: OLADOKUN AYOMIDE PRECIOUS.**

**MATRIC NO: 18/MHS01/280.**

**DEPARTMENT: Medicine and Surgery [MBBS].**

**COLLEGE: Medicine and Health Sciences [MHS].**

**COURSE: EMBRYOLOGY.**

**ASSIGNMENT.**

Discuss the second week of development.

There are three things that occurs during the second week of development;

1. Completion of implantation.
2. Formation of bilaminar disc.
3. Development of extra embryonic structure.

Completion of Implantation; implantation is completed during the second week of development, which is between day 11 and 12 of the second week. As the trophoblast implants, it comes in contact with the endometrium and differentiates into two layers; an inner layer **[cytotrophoblast]** and an outer layer **[syncytiotrophoblast]**. It’s the syncytiotrophoblast that embeds in the endometrium and the cells of the syncytiotrophoblast displaces the endometrial cells which causes the endometrial cells to undergo apoptosis [cell death]. Cells of the inner mast cell [embryoblast] also differentiates into two layers; **the epiblast layer** adjacent to the amniotic cavity which is columnar in shape and **the hypoblast layer** adjacent to the blastocyst cavity which is cuboidal in shape. To form the **bilaminar embryonic disc**, the epiblast and hypoblast fuses together. During this time, a small cavity which enlarges to form the **amniotic cavity** is formed within the epiblast. The amniotic cavity is lined by the epiblast and the **amnioblasts** formed from epiblast cells adjacent to the cytotrophoblast. When the blastocyst is fully imbedded in the endometrium, the surface of the endometrium is closed by a coagulum called **fibrin**. The cell of the hypoblast adjacent to the trophoblast forms the **exocoelomic [heuser’s] membrane** which lines the inner surface of the cytotrophoblast. This membrane together with the hypoblast forms the lining of the **exocoelomic cavity** which is also called **primitive yolk sac** or **primary umbilical vesicle**. At this stage also a lacunae develops within the region of syncytiotrophoblasts called the **trophoblastic lacunae**. All these events occurs during the 8th – 10th day of development before the 11th -12th day of development which is when the blastocyst is fully embedded in the endometrium.

During the 11th-12th day, the blastocyst is fully embedded in the endometrium causing the capillaries to rupture which are referred to as **sinusoids**. The ruptured sinusoids communicates with the trophoblastic lacunae causing blood to migrate from mother to child. At this stage, **primordial uteroplacenta circulation** is established. During the stage, a layer is formed between the excoelomic cavity and the trophoblast which is called the **extraembryonic mesoderm**. Within the region of this mesoderm, a cavity is formed called the **extraembryonic cavity** also known as **extraembryonic coelom** or **chorionic cavity**. An **extraembryonic somatic mesoderm** is formed which is the mesoderm lining the cytotrophoblast and amnion. This mesoderm also forms the **connecting stalk**. The lining covering the exocoelomic cavity or yolk sac is known as the **extraembryonic splanchnic mesoderm**. As the embryo in the uterus implants the endometrium, a **decidual reaction** occurs which is a transformation of the endometrial tissue. During this transformation, the cells of the endometrium swells as a result of accumulation of glycogen and lipids in their cytoplasm and are known as **decidual cells**. This reaction provides nutrition for the early embryo and an immunologically privileged site for the conceptus.

The cells of the cytotrophoblast proliferate locally and penetrate into the syncytiotrophoblast which forms cellular columns covered by syncytium known as **primary villi.** The primaryyolk sac reduce in size to become the **secondary yolk sac or secondary umbilical vesicle.** The portion of primary yolk sac removed is called **exocoelomic cyst** which are often found in the chorionic cavity or extraembryonic coelom. The extraembryonic mesoderm lining the inside of the cytotrophoblast is called **chorionic plate.** The only place where the extraembryonic mesoderm traverses the chorionic cavity is in the **connecting stalk.** With development of blood vessels, the connecting stalk becomes **umbilical cord.**