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2nd Week of Embryonic Development

3 major events take place during the 2nd week of embryonic development and they are as follows:

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

Day 8 of Embryonic Development

- ✓ As the blastocyst implants, more trophoblast contracts the endometrium and differentiates into 2 layers:
 - Cytotrophoblast, an inner layer, which is mitotically active and forms new cells that migrate into the

increasing mass of syncytiotrophoblast, where they fuse and lose their cell membranes.

- Syncytiotrophoblast, a rapidly expanding, multinucleated mass in which no cell boundaries are discernible.
- ✓ The erosive syncytiotrophoblast invades the endometrial connective tissue, and the blastocyst slowly becomes embedded in the endometrium.
- ✓ Syncytiotrophoblast cells displace endometrial cells at the implantation site.
- ✓ The endometrial cells undergo apoptosis (programmed cell death) which facilitates cell division.
- ✓ The connective tissue cells around the implantation site accumulate glycogen and lipids and assume a polyhedral appearance.
- ✓ Some of these cells, decidual cells, degenerate adjacent to the penetrating syncytiotrophoblast.
- ✓ The embryoblast is divided into 2 types of cells
 - Hypoblast, consisting of small cuboidal cells adjacent to the exocoelomic cavity.
 - Epiblast, the thicker layer, consisting of high columnar cells related to the amniotic cavity.

- ✓ The epiblast and hypoblast give rise to the bilaminar germ disc.

Day 9 of Embryonic Development

- ✓ The blastocyst is deeply embedded in endometrium.
- ✓ The opening on the surface of the epithelium is closed by fibrin coagulum.
- ✓ There is development of a membrane lying adjacent to the cytotrophoblast and is called **EXCOELOMIC MEMBRANE/HEUSER'S MEMBRANE**.
- ✓ The excoelomic cavity/primary yolk sac/primary umbilical vesicles is surrounded by the excoelomic membrane.
- ✓ Vacuoles develop in the syncytiotrophoblast called **TROPHOBLASTIC LACUNAE**.

Day 11-12 of Embryonic Development

- ✓ Ruptured capillaries are referred to as **Sinusoid**.
- ✓ Sinusoid communicate with the trophoblastic lacunae (in the blastocyst) transporting blood, nutrients and oxygen to the child
- ✓ A space of mesoderm developed between the region of cytotrophoblast and excoelomic cavity and region of

amnioblast and excoelomic cavity is called
extraembryonic mesoderm

- ✓ An extraembryonic cavity/extraembryonic coelom is developed at the extraembryonic mesoderm.
- ✓ The site that lines the path of the cavity is called **extraembryonic somatic mesoderm**.
- ✓ The path of the extraembryonic cavity that lines the excoelomic cavity is called the **extra embryonic splanchnic mesoderm**.
- ✓ As development continues, a reaction take place called **Decidual Reaction**.
- ✓ The primary function of the Decidual reaction is to provide nutrition for the early embryo and an immunologically privileged site for the conceptus

Day 13 of Embryonic Development

- ✓ The cells of the cytotrophoblast acquire syncytium giving a shape of the villi extending to the region of the syncytiotrophoblast and is called **primary villi**.
- ✓ The connective stalk gives rise to the umbilical cord.

