

Name: Akin-Adewale Ayotola
Matric Number: 19/MHS01/442
Date: 15th May 2020

The Second Week of Embryonic Development

Introduction

The second week of embryonic development consists of a series of events that occur after fertilization and implantation.

Three major events take place during the second week of development.

1. Completion of implantation
2. Formation of bilaminar germ discs
3. Development of extraembryonic structures

Stages of the second week of embryonic development

Day 8

- Blastocyst is partially embedded in the endometrium.
- Syncytiotrophoblast continues to erode the endometrium.
- Cytotrophoblast continues to divide and migrate to the region of the syncytiotrophoblast.
- Embryoblast differentiates into 2 types of cells- cuboidal cells (hypoblast) and columnar cells (epiblast).
- Epiblast and hypoblast gives rise to **bilaminar germ disc**.

Day 9

- Blastocyst is deeply embedded in the endometrium.
- Surface epithelium is covered by fibrin coagulum.
- Cells of the hypoblast forms the heuser's membrane lining the exocoelomic cavity or primary yolk sac.

Day 10

- The blastocyst is completely embedded in the endometrium.
- Vacuum develops in the region of the syncytiotrophoblast and enlarges to form trophoblastic lacunae.

Day 11-12

- The trophoblastic lacunae becomes ruptured causing communication of blood between mother and embryo, at this stage, **primordial uteroplacenta circulation** is formed.
- A space of mesoderm develop between the region of the cytotrophoblast and exocoelmic cavity and also between the cytotrophoblast and the amnion except at the connecting stalk, the mesoderm space is called **extraembryonic mesoderm**.
- In between the mesoderm, the cavities called the extraembryonic cavities develop, these cavities differentiate the mesoderm into 2 parts;
- The part that lines the cytotrophoblast is the **extraembryonic somatic mesoderm**.
- The part that lines the exocoelmic cavity is the **extraembryonic splanchnic mesoderm**.

Day 13

- Cells of the cytotrophoblast acquire syncytium which moves towards the syncytiotrophoblast and becomes primary villi.
- Connecting stalk gives rise to umbilical cord.
- The extraembryonic cavity enlarges to form chronic cavity.
- The primary yolk sac becomes secondary yolk sac.

[Type here]

- During its formation, a large portion of the exocoelomic cavity is pinched off to form the exocoelomic cyst.
- A large portion of the exocoelomic cavity/primitive or primary yolk sac.

Clinical correlates

- Syncytiotrophoblast produces a hormone called HCG- Human Chronic Gonadotropin which allows the corpus luteum to secrete progesterone and estrogen.
- Levels of HCG is the basis of pregnancy tests.