SECOND WEEK OF EMBRYONIC DEVELOPMENT

The following events takes place during the second week

8th day

- The blastocyst is partially embedded in the endometrial stroma. In the area over the embryoblast, the trophoblast differentiates into 2 layers
- Cytotrophoblast or inner mononucleated cell layer
- Outer multinucleated zone, syntrotiotrophoblast which produces human chrionic gonadotrophin
- Syntrotiotrophoblast continues its invasion of the endometrium, thereby eroding endometrial blood vessels and glands
- Inner cell mass differentiates into small cuboidal cells adjacent to blastocyst cavity, hypoblast and high columnar cells adjacent to the amniotic cavity, the epiblast layer
- Both hypoblast and epiblast together form a flat Oovid shaped disc called the bilaminar embryonic disc. A small cavity appear within the epiblast which enlarges to form the amniotic cavity
- Aminoblast are epiblast cells adjacent to Cytotrophoblast, together with epiblast line the amniotic cavity
- The endometrium adjacent to the implantation site is edematous and highly vascular. The large, tortuous glands secrete abundant glycogen and mucus.

  9th Day

  - The blastocyst is more deeply embedded in the endometrium and fibrin closes the penetration defect in the epithelium surface
  - Vacuoles appear at the region of the trophoblast and the fuse to form lager lacunae, this phase of trophoblast development is known as lacunar stage
  - The cell of the hypoblast adjacent to the Cytotrophoblast form a thin membrane called the exocoelomic(heuser) membrane which lines the inner surface of the Cytotrophoblast
  - The exocoelomic membrane together with the hypoblast forms the lining of the exocoelomic cavity, or primitive yolk sac

    11th-12th

- The blastocyst is completely embedded in the endometrium and the surface epithelium is almost covering the original defect in the uterine wall
- Syntrotiotrophoblast cells penetrate deeper in the stroma and erode the endothelial lining of the endometrial capilaries, the ruptured endometrial capilaries are called sinusoidal in which the lacunae communicates maternal(oxygen and nutritive substances) blood to and fro which established the primordial uteroplacental circulation
- New cell population exist between inner surface of Cytotrophoblast and outer surface exocoelomic cavity
- Yolk sac derived cells form extra embryonic mesoderm In which large cavities develop in it to form extra embryonic cavity
- Extra embryonic mesoderm lining the Cytotrophoblast and amnion is called extraembryonic somatic mesoderm
- Yolk sac lining covering is extraembryonic splanchnic mesoderm
- As concepts implants, endometrial connective tissue cells transforms to decidual reactions which endometrial cells swell because of glycogen and lipid accumulation in the cytoplasm and they are decidual cells

  13th day

  - The surface defect has completely been covered
  - Occasionally bleeding at the implantation site
  - Cytotrophoblast cells proliferate locally and penetrate the synctiotrophoblast forming cellular column with synctial coverings called primary villi
  - The hypoblast produces additional cells that migrate along the exocoelomic membrane insides, proliferate and gradually forms a new cavity called secondary yolk sac
  - During formation, large portion of exocoelomic cavity are pinched off to form exocoelomic cysts, while the exocoelomic coelom forms chrionic cavity
  - The extraembryonic mesoderm lining inside the Cytotrophoblast is known as chrionic plate
  - The only place where extraembryonic mesoderm transverse the chrionic

cavity is in the connecting stalk

- WIth blood vessel development, the connecting stalk becomes the umbilical cord