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Discuss the second week of development

In the second week of development, three major things take place

- 1) completion of implantation
- 2) formation of bilaminar embryonic disk
- 3) formation of extra embryonic structures(amnions, umbilical cord etc)

At the 8th day after fertilization, the blastocyst is partially embedded in the endometrium, the syncytiotrophoblast erode endometrium blood vessels and glands then the cells of cytotrophoblast migrate into the syncytiotrophoblast where they fuse, cells of the inner embryonic disk divide into the hypoblast and epiblast, and these hypoblast are cuboidal cells adjacent to blastocystic cavity while the epiblast are columnar cells that are adjacent to the amniotic cavity these two together form the bilaminar embryonic disk. The epiblast adjacent to the cytotrophoblast is called amnioblast. And this amnioblast together with the rest of the epiblast form the amniotic cavity. Then the blastocyst is more embedded in the endometrium then vacuoles appear at the trophoblast and fuse to form lacunae and this is called lacunar stage. the hypoblast adjacent to the cytotrophoblast is called exocoelomic/hausers membrane. The hausers membrane together with the rest of the hypoblast form the primary umbilical vesicle. then the blastocyst is more embedded in the endometrium, then there is a protrusion in the lumen of the uterus. Then the syncytiotrophoblast erode the lining of the capillaries, these destroyed capillaries are called sinusoids. the communication of the lacunae and these sinusoids bring about the maternal flow of blood into the lacunar system which supplies the embryo with nutrient and oxygen and established primodal uteroplacental circulation then new population of cells occur in the inner cell of cytotrophoblast and the outer cells of exocoelomic cavity. These cells are derived from the yolk sac and are called extra embryonic mesoderm. The extraembryonic mesoderm that lines the yolk sac is called extraembryonic splanchnic mesoderm while the extraembryonic mesoderm that lines the cytotrophoblast and amnions is called extraembryonic somatic mesoderm. These exocoelomic cavities line the yolk sac and amniotic cavity except where the germ cell is attached to the trophoblast which later turns to umbilical cord. then the endometrium undergoes a transformation and it is called decidual reaction. during this transformation, the cells of the endometrium swell due to the accumulation of the lipid and glycogen and they are known as decidual cells, the primary function of decidual cells is to provide nutrition and immunological site for the embryo. then the surface defect is covered by surface endometrium and bleeding occurs at the implantation due to the increase in blood flow into lacunar spaces, then the cytotrophoblast penetrate into syncytiotrophoblast forming columns surrounded by syncythium this columns with syncythium covering is called primary villi, then the hypoblast produce more exocoelom membrane and they form cavities in then which is now called the secondary yolk sac. It is much smaller than the primary yolk sac and while the formation occurs small part of the exocoelomic cavity is pinched off to give exocoelomic cysts and these cysts are found in exocoelom coelom / cavity or chorionic cavity and these extraembryonic cavity enlarge to form chorionic cavity. the extraembryonic mesoderm lining the cytotrophoblast is called the chorionic plate the only place where embryonic mesoderm transverse the chorionic plate is the connecting stalk and due to development of blood vessels, this connecting stalk later turns into the umbilical cord.

