

Second Week of Development Bilaminar Germ Disc

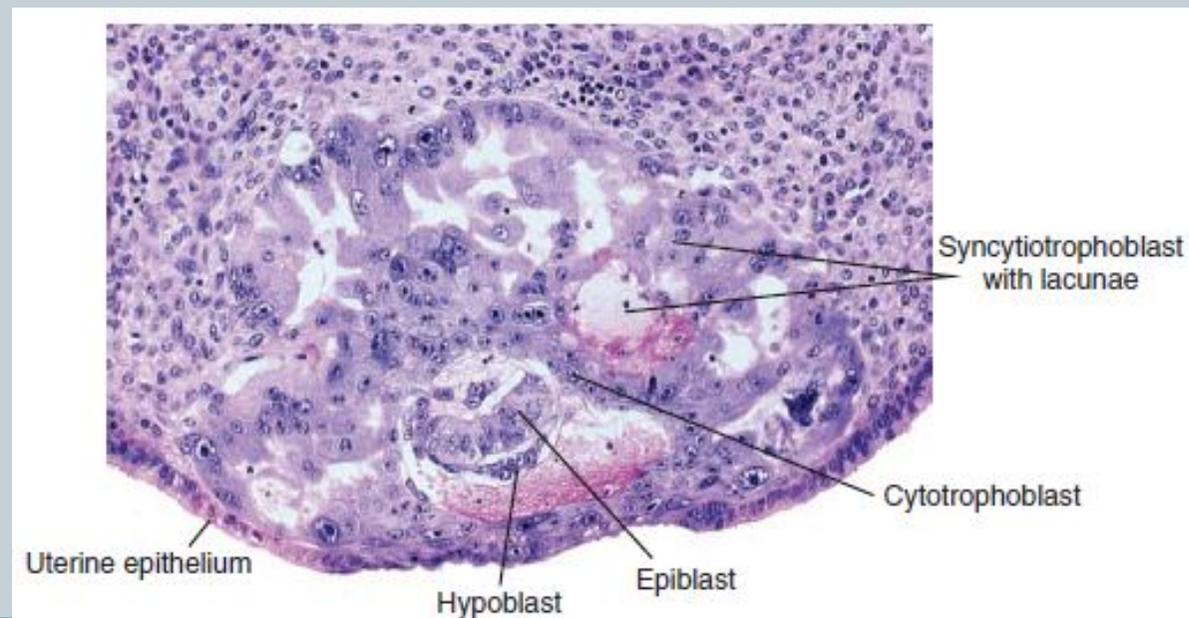


**a day-by-day
The major events of the second week of
Development**

8th day



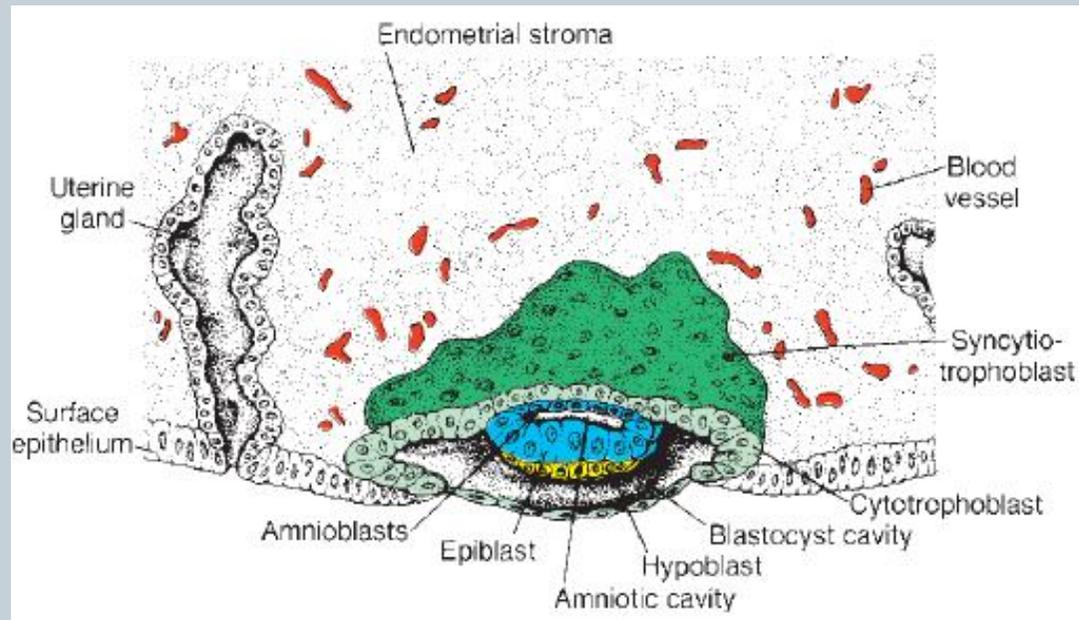
- the blastocyst is partially embedded in the endometrial stroma.
- the area over the embryoblast, the trophoblast has differentiated into two layers:
 - (1) **cytotrophoblast** (a mononucleated cells inner layer)
 - (2) **syncytiotrophoblast** (an outer multinucleated zone without distinct cell boundaries)
- Mitotic figures are only found in the cytotrophoblast



8th day



- Cells in the inner cell mass or embryoblast differentiate into two layers:
- (1) **hypoblast layer** (a layer of small cuboidal cells adjacent to the blastocyst Cavity)
- (2) **epiblast layer** (a layer of high columnar cells adjacent to the amniotic Cavity)
- form a flat disc
- **amniotic Cavity**
- **amnioblasts**



- edematous and highly vascular endometrial stroma
- abundant glycogen & mucus secrete by large & tortuous glands

9th day



- The blastocyst is more deeply embedded in endometrium (a fibrin coagulum)

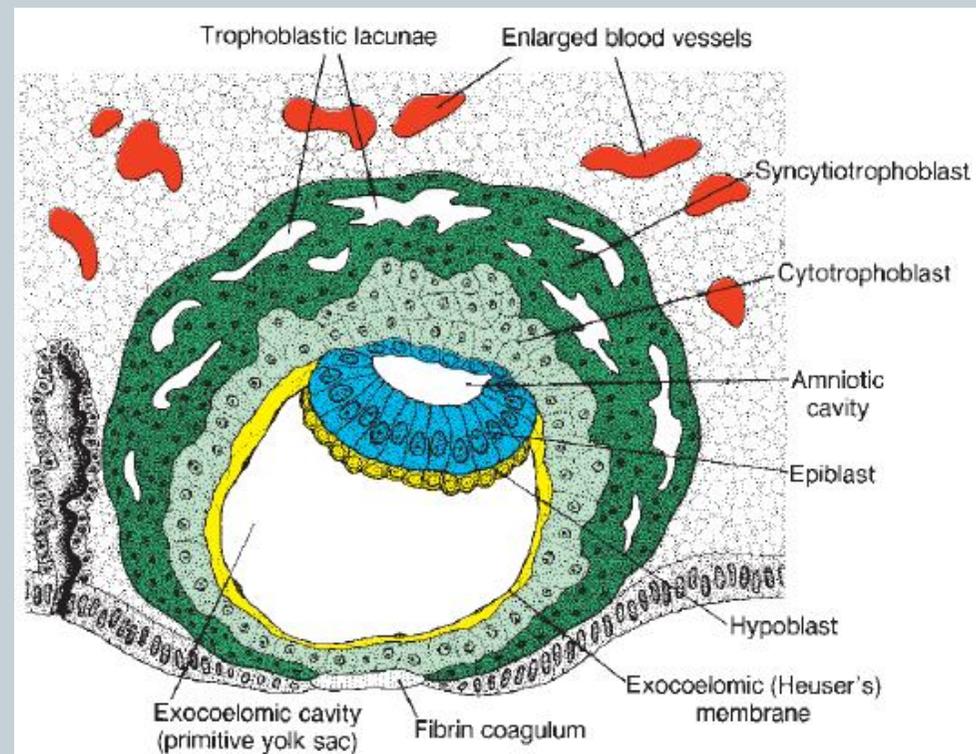
The trophoblast development, (particularly at the embryonic pole)

- vacuoles appear in the syncytium
- vacuoles fusion & large lacunae formation

lacunar stage

At the abembryonic pole

- the exocoelomic (Heuser's) membrane (hypoblast flattened cells)
- **exocoelomic cavity (primitive yolk sac)**



11th & 12th days



- blastocyst is completely embedded in the endometrial stroma
- slight protrusion into the lumen of the uterus

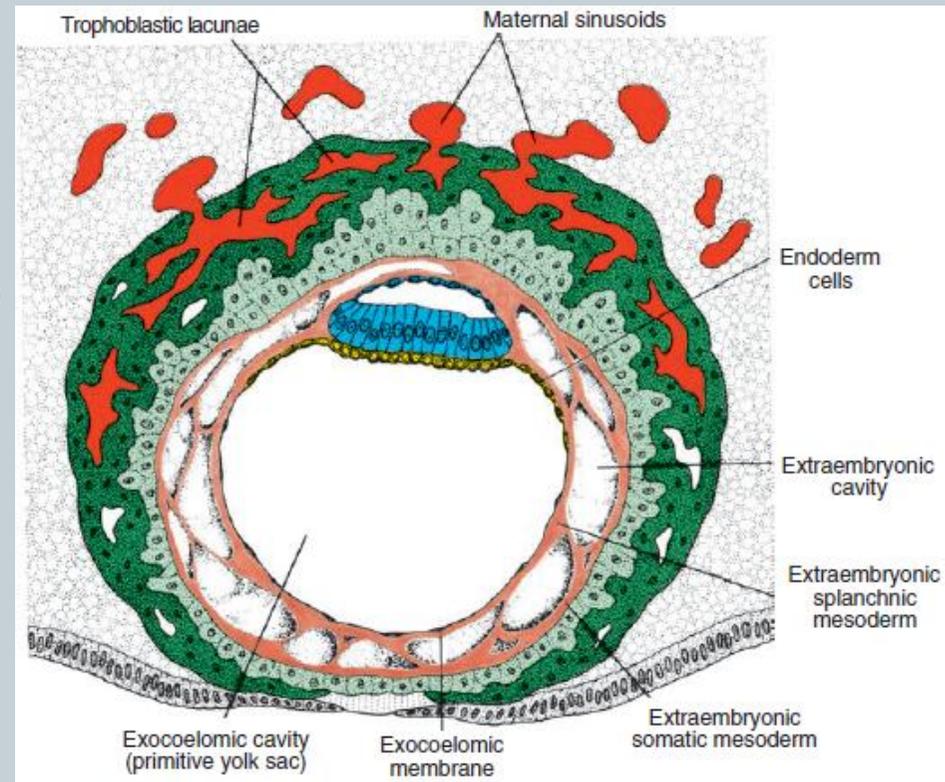
Sinusoids

uteroplacental circulation

- exocoelomic cavity

Extraembryonic mesoderm

- **extraembryonic cavity (chorionic cavity)**
- connecting stalk
- **extraembryonic somatic mesoderm**
- **extraembryonic splanchnic mesoderm**
- **decidua reaction**



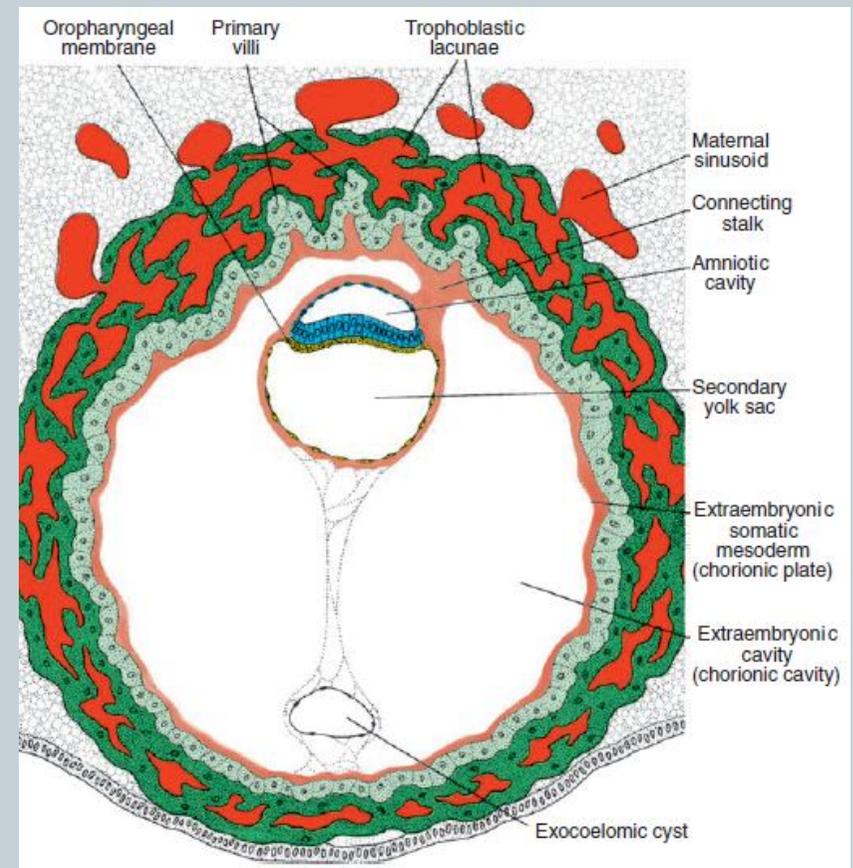
13th day



- the surface endometrium has healed.
- Occasionally, bleeding occurs at the implantation blood flow in lacunar spaces
- Secondary (definitive) yolk sac formation
- Formation of villus structure
- Primary villi

Extraembryonic coelom expand & form chorionic cavity

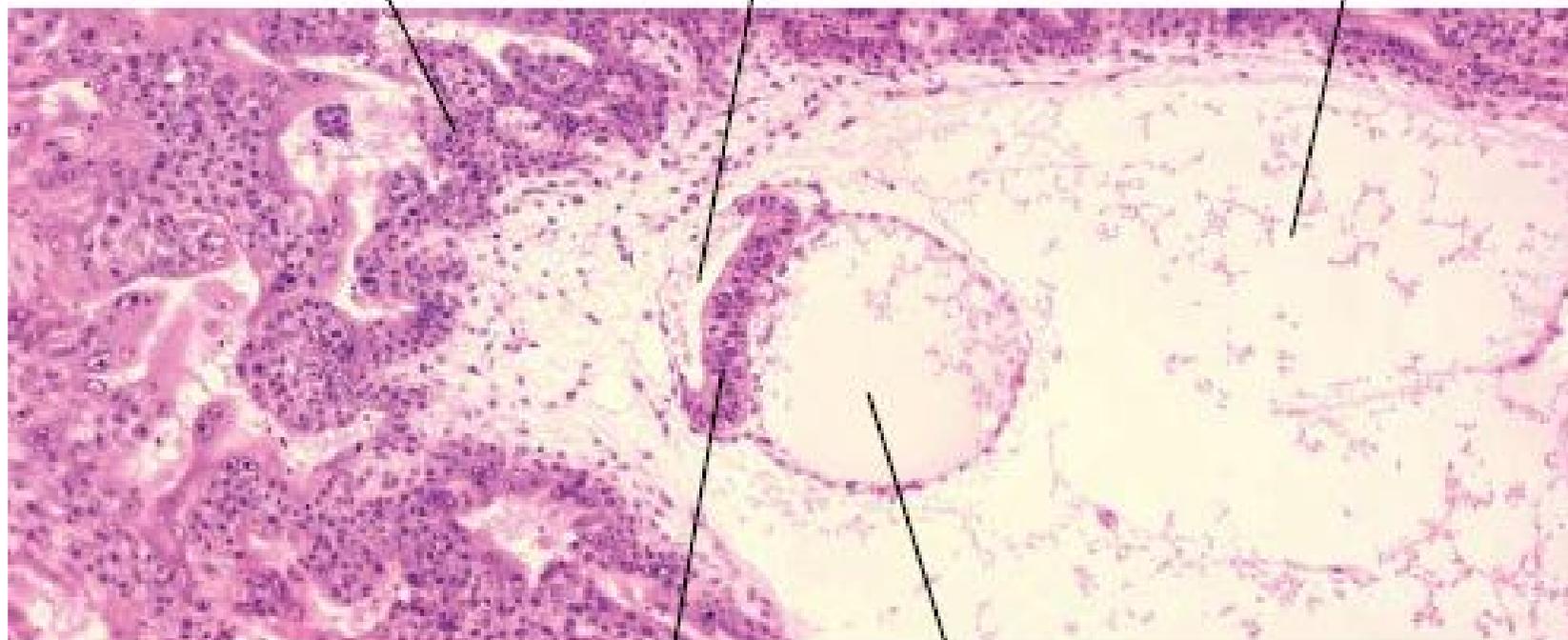
Connective stalk form umbilical cord



Primary villi

Amnionic cavity

Chorionic cavity



Epiblast

Yolk sac

Clinical correlations



- Human chorionic gonadotropin (hCG)
- Second week
- RIA
- Immune system & pregnancy
- Cellular to humoral immunity

Abnormal implantation

Normally:

- Anterior or posterior wall of uterus
 - Cervix internal os (placenta previa)
-
- Ectopic pregnancy (2%) (9% mortality)
- Abdominal cavity (rectouterine cavity)
Ovary
Uterine tube (95%)

Hydatidiform mole (choriocarcinoma)
Paternal

Genomic imprinting
Bar body

15% of oocyte no fertilization
10-15% cleavage but no implantation
70-75% impantation
58% survive to second week (16% abnormal)
Only 42% of fertilized oocytes survived

