

وسهلا

أهلا



الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب - جامعة الزقازيق - مصر

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دكتورة من جامعة كولونيا المانيا

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جروب الفيس د. يوسف حسين (استاذ التشريح)

Inner cell mass

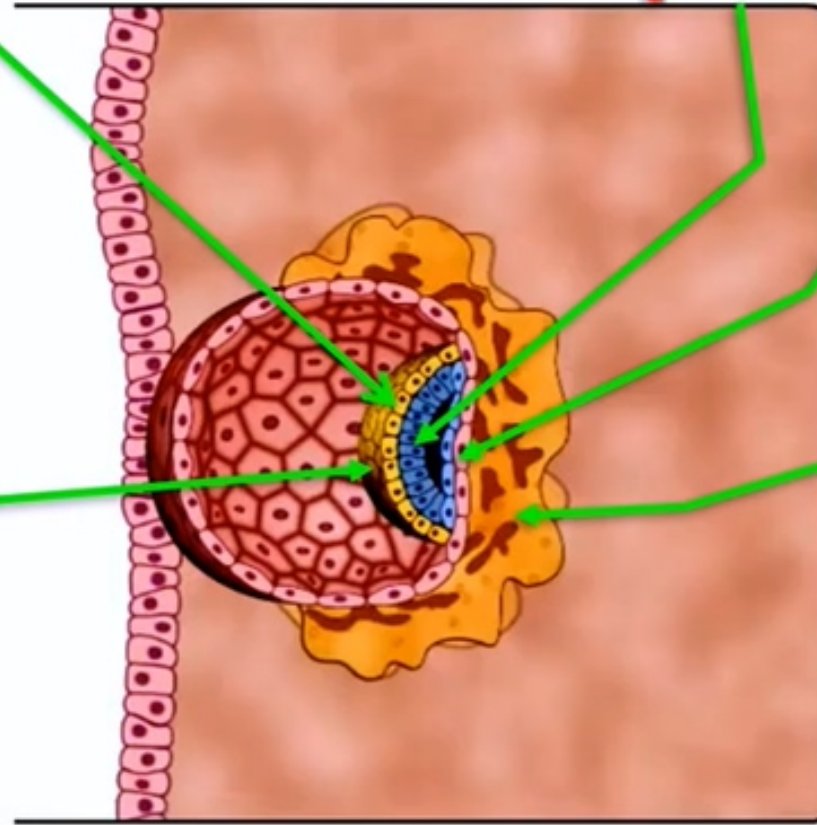
Epiblast

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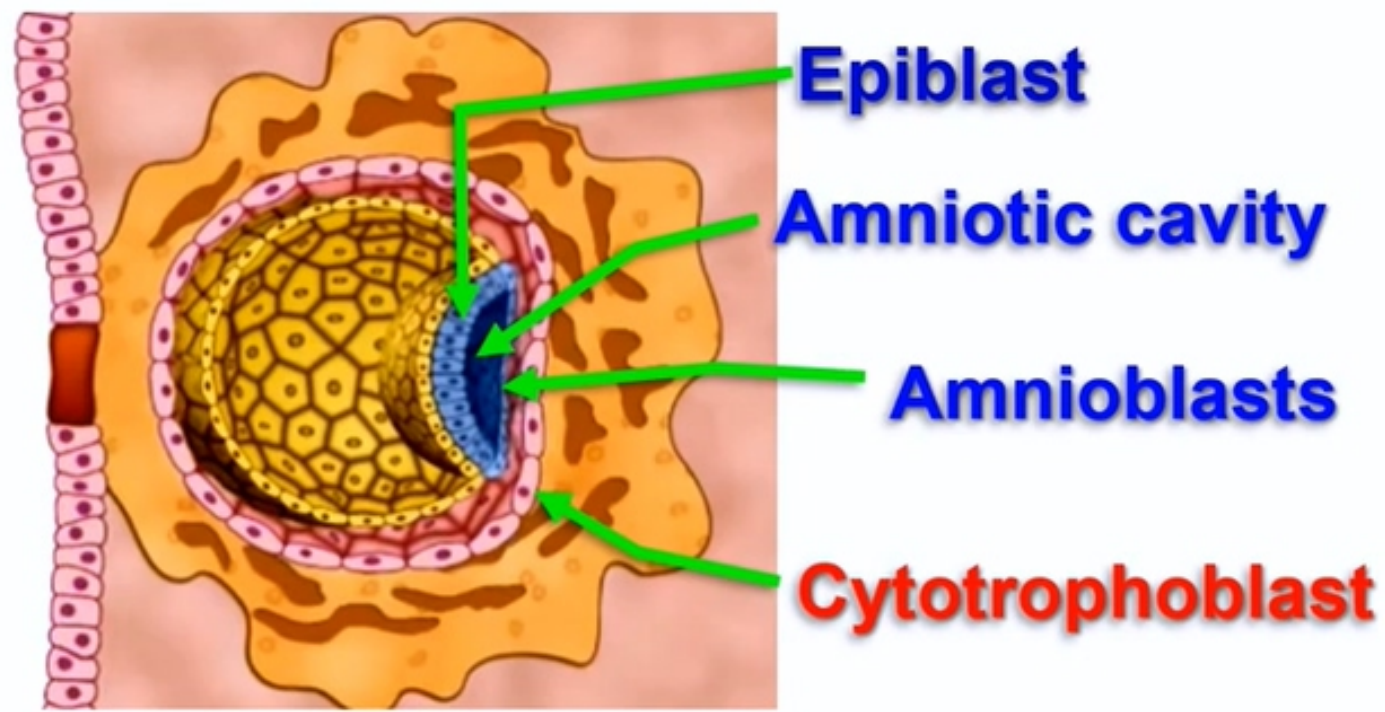
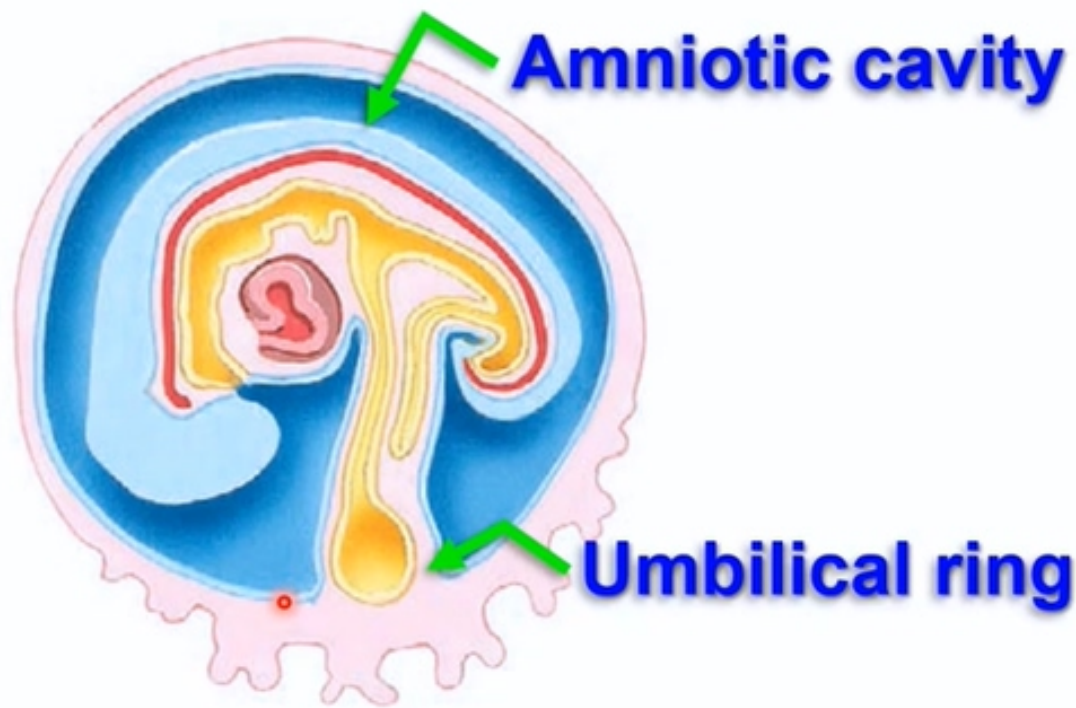
Hypoblast

Cytotrophoblast

Syncytiotrophoblast



- The inner cell mass proliferates and its shape is **flat circular disc**.
- The cells are differentiated into 2 layers:
 - 1. Dorsal** columnar layer (**Ectoderm**) called **epiblast**.
 - 2. Ventral** cuboidal layer (**Endoderm**) called **hypoblast**.



- A small cavity appears within the epiblast. This cavity enlarges to become the **amniotic cavity containing amniotic fluid**.
- Epiblast cells adjacent to the **cytotrophoblast** are called **amnioblasts**.
- **The amniotic cavity** is lined by **Amniotic membrane**
 - It is a thin, transparent and non-vascular membrane.
 - **After folding** of the embryo, the amnion completely surrounds the embryo and becomes attached to the margins of the umbilical ring.

▪ Amniotic Fluid

- It is a clear, watery fluid containing salt, sugar, urea, and proteins.
- **Source of fluid:**
 - A. Secretion of amniotic cells
 - B. **Fetal urine from the kidneys**
 - C. Secretion of lung cells
 - D. **Secretion by placenta.**

- **Elimination of the amniotic fluid:**

- The amniotic fluid is **swallowed** by fetus, **absorbed** by intestine to fetal blood, then **secreted** again by fetal kidneys or excreted by placenta to maternal blood.

▪ Amount of amniotic fluid

- **At 10 weeks: 30 ml.**
- **At 20 weeks: 350 ml.**
- **At 36 weeks: 1 liter.**
- **At full term reaches 1-1.5 liters.**

• **Composition of the amniotic fluid**

- **98% water**
- **2% organic and inorganic salts, protein, carbohydrate, fat, urea, enzymes, hormones, desquamated fetal epithelial cells and fetal urine.**
- **All are important for growth of the fetus.**

- **Functions of the amnion**

- I) During pregnancy:**

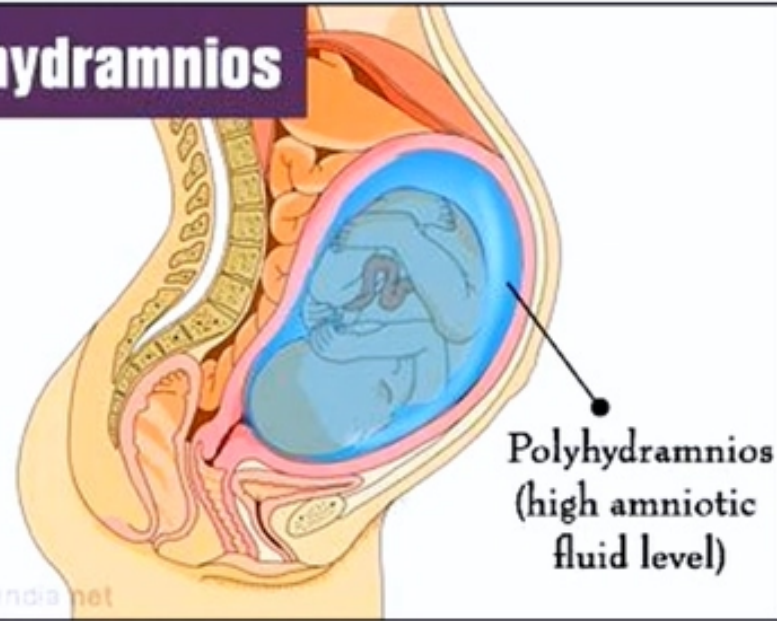
1. **Protection of the fetus** against external trauma.
2. **Nutrition for the fetus.**
3. Medium for **excretion of the fetus.**
4. Allows **free movement of the fetus** helping development of the locomotor system.
5. **Prevents adhesion of the parts of the fetus.**
6. **Keeps a constant temperature** around the fetus.
7. **Development of suckling reflex** due to swallowing of amniotic fluid.

- II) During labor:**

- 1) **Dilatation of the cervix of the uterus** at early stage of labor.
- 2) Acts as **antiseptic medium** for the vagina.
- 3) Acts as a **lubricant** that facilitates delivery of the fetus.

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Polyhydramnios



Congenital anomalies of amnion



- **Polyhydramnios** **The excessive accumulation of amniotic fluid (2000 ml or more) in the amniotic cavity**

• This occurs due to:

- Fetuses of **diabetic mothers**.
- Excess of secretion as **twin pregnancy**.
- Decrease elimination as in **esophageal atresia** and **anencephaly**, because the fetus is unable to swallow the amniotic fluid

▪ **Oligohydramnios:**

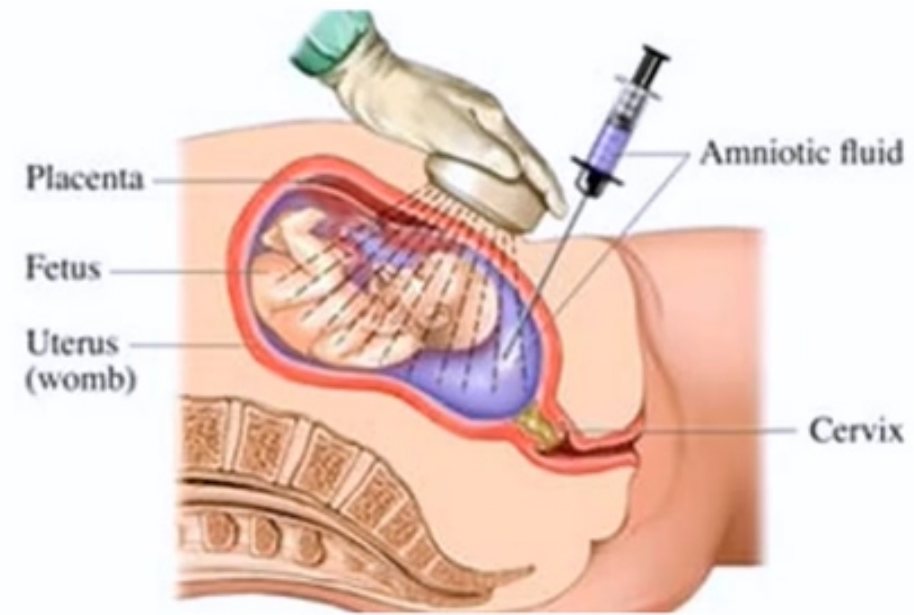
- **the volume of amniotic fluid is less than ½ liter leading to adhesion.**
- This occurs due to decreased secretion as in **bilateral agenesis of the kidneys** Leading to adhesion of the fetus

▪ Amniocentesis

- Aspiration of the amniotic fluid for diagnostic purposes.

- It is usually done at 14th or 15th week of pregnancy, when the amniotic sac contains 175–225 ml of amniotic fluid.

- detection of the **sex** of a fetus by chromosomal studies.
- it can be used to study fetal enzymes and fetal hormones (high level of alpha fetoprotein indicating neural tube defects).
- **Chromosomal analysis** to detect the congenital anomalies early (Down syndrome).
- Detection the amount of **surfactant** of the respiratory system.
- **Rh-incompatibility** in case of hemolysis.



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