

* Placenta:-

→ It is structural and functional unit between developing embryo (foetus) and maternal body called Placenta.

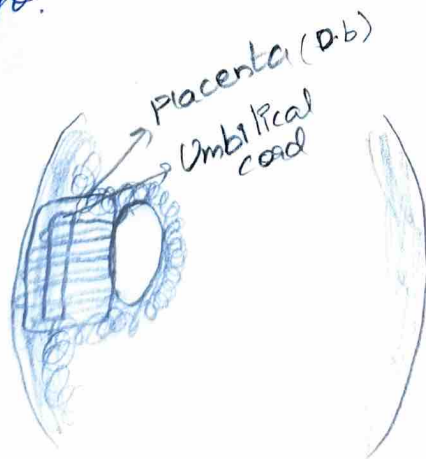
→ Placenta include ① Chorionic villi
② Uterine tissue

→ Finger-like projections appears on the ~~trophoblast~~ called Chorionic villi.

→ The uterine tissue and maternal blood surrounding the chorionic villi become a part of Placenta (Desidua basalis).

→ The chorionic villi and uterine tissue become interdigitated with each other and jointly form Placenta.

→ The placenta is connected to the embryo through an umbilical cord which helps in the transport of substances to and from the embryo.



* Functions of Placenta:-

- The placenta facilitates the supply of oxygen and nutrients to the embryo (chorion).
- And also removal of carbon dioxide and excretory/waste materials produced by the embryo (Allantois).
- Hence, the human placenta is called chorio-Allantoic placenta.
- Placenta also acts as endocrine tissue and produces several hormones like human chorionic gonadotropin (hCG), human placental Lactogen (hPL), estrogens, progesterons, etc.

Note:-

- In the later phase of pregnancy, a hormone called **relaxin** is also secreted by the Ovary.
- Hormones released during only pregnancy are
 - ① Human chorionic gonadotropin (hCG)
 - ② human placental Lactogen (hPL)
 - ③ Relaxin
- Hormones levels increases during pregnancy are
 - ① Estrogen
 - ② Progesterone
 - ③ Cortisol
 - ④ Prolactin
 - ⑤ thyroxine

→ Increased production of these hormones is essential for supporting the fetal growth, metabolic changes in the mother and maintenance of pregnancy.



zygote



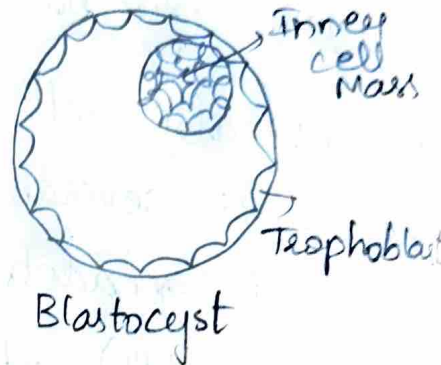
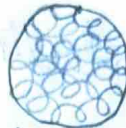
2 cell



4 cell



Morula
(8-16 cell stage)



Blastocyst

* Morula:-

- It contains 8-16 blastomeres.
- It is in Isthmus and moves towards uterus.

* Blastocyst:-

- Morula continues to divide and transforms into blastocyst as it moves further into the uterus.
- The blastomeres in the blastocyst are arranged as an outer layer called trophoblast and an inner layer called inner cell mass.
- The trophoblast layer attaches to the endometrium to form placenta and the

process called Implantation.

→ Inner cell mass contains certain cells called stem cells which have the potency to give rise to all the tissues and organs.

→ Inner cell mass (embryo) differentiates into an outer layer called ectoderm and an inner layer called endoderm. A mesoderm soon appears between the ectoderm and the endoderm.

* 1st Month of Pregnancy:-

- The embryo's heart is formed.
- The first sign of growing fetus may be noticed by listening to the heart sound carefully through the stethoscope.

* 2nd Month of Pregnancy:-

- By the end of the second month of pregnancy, the fetus develop limbs and digits.

* By the end of 12 weeks / First Trimester / 3rd Month:-

- Most of the major organ systems are developed.

Ex:- The Limbs and external genital organs are well developed.

1 - H

2 - LD

3 - MOLE

Heart LID is with Mole.
1 2 3

* 5th Month:-

- First movements of the foetus.
- Appearance of hair on the head.

* By the end of 24 weeks / 2nd Trimester / 6th Month:-

- Body is covered with fine hair.
- Eye-lids are separate.
- Eye lashes are formed.



* Gestation Period:-

→ The average duration of human pregnancy is about 9 months which is called the gestation period.

* Parturition:-

→ Vigorous contraction of the uterus at the end of pregnancy causes expulsion/delivery of the foetus. This process of delivery of the foetus (child birth) is called Parturition.

→ Parturition is induced by a complex neuroendocrine mechanism.

* Foetal ejection Reflex:-

→ The signals for parturition originate from the fully developed foetus and the placenta which induce mild uterine contractions called foetal ejection reflex.

→ This triggers release of oxytocin from the maternal pituitary.

* Lactation:-

→ The mammary glands of the female undergo differentiation during pregnancy and starts producing milk towards the end of pregnancy by the process called Lactation.

* Colostrum:-

→ The milk produced during the initial few days of lactation is called colostrum which contains several antibodies ^(IgA) absolutely essential to develop resistance for the new-born babies.

Assertion:-

→ Breast feeding during the initial period of infant growth is recommended by doctors for bringing up a healthy baby.

Reason:-

→ Colostrum contains several antibodies (IgA) absolutely essential to develop resistance for the new-born babies.

signals from fully
developed foetus
(Foetal ejection Reflex)



cause mild uterine
contraction



Stimulate Release of
Oxytocin (Maternal pituitary)



Stimulate stronger
uterine contraction



more secretion of
Oxytocin



Stronger and stronger
contractions



Leads expulsion of the baby
out of the uterus through
the birth canal - parturition.