

B.Sc Second year Zoology (Subsidiary)

Dr. Mirza Imteyaz Baig

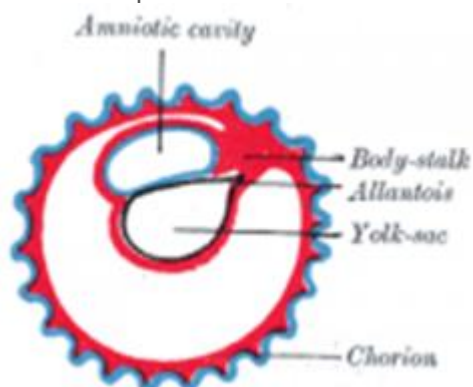
MAMMALS-PLACENTA

In Eutherian mammals the embryo develops in the uterus of mother. The developing embryo will get nourishment from mother through the placenta. Placenta is not common to all mammals. It is developed well in Eutheria. The term placenta was derived from Greek word it means flat cake. Placenta is a special connective tissue, which contains the uterus of mother and foetal membranes of foetus. Prototherian mammals are egg laying mammals. Hence placenta is not formed in uterus.

In marsupials the embryo develops incompletely in the uterus. They show yolk sac placenta and primitive allantoic placenta: Yolk sac placenta :

Ex :

In these animals the developing embryo shows small allantois. It will never come in contact with chorion. This part will gain blood vessels. This comes in contact with endometrium of uterus, only a contact, but not fusion. Through this the embryo will absorb nourishment from This is called chorio vitelline placenta or Yolk placenta.

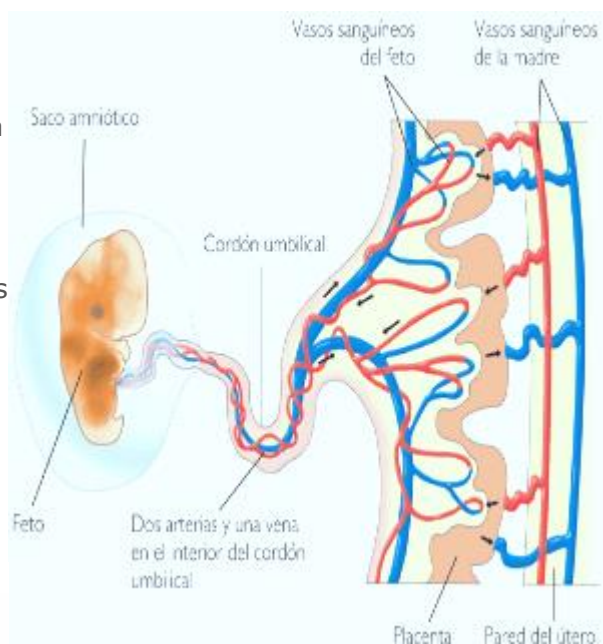


Primitive allantoic placenta:

In paramoles simple allantoic placenta is developed. Allantoic will enlarge. It comes in contact with chorion. This structure will be closely applied to mother's uterus. It is called chorio-allantoic placenta. In these animals yolk sac placenta is not seen.

Placenta In Eutheria:

In Eutherian mammals true allantoic placenta is seen. Allantoic becomes big and comes in contact with chorion. This part will show close association with uterine wall. This connection is called placental connection. The structure of placenta will vary in different orders of Eutheria.



Diadelphis.

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Placenta is classified in three ways.

- The placenta classification on nature of contact.
- Placenta is classified basis on the distribution of villi.
- Classification of placenta basing on histology.

Nature of contact:

It is two types, Indeciduate and deciduate type.

Indeciduate type

placenta Ex. Ungulate, Cetaceans, Sirenians.

Lemurs:

The chorionic villi are simple projections, they lie in contact with uterus. They have a loose contact. There is no fusion. At the time of birth of embryo uterus is not damaged.

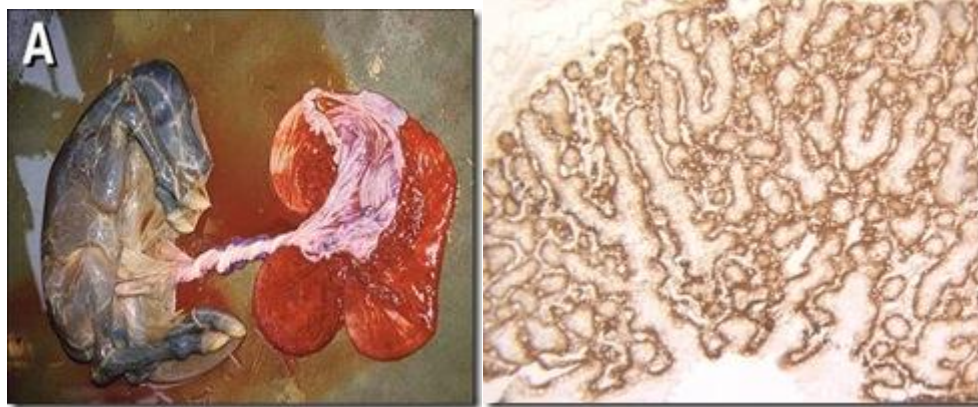
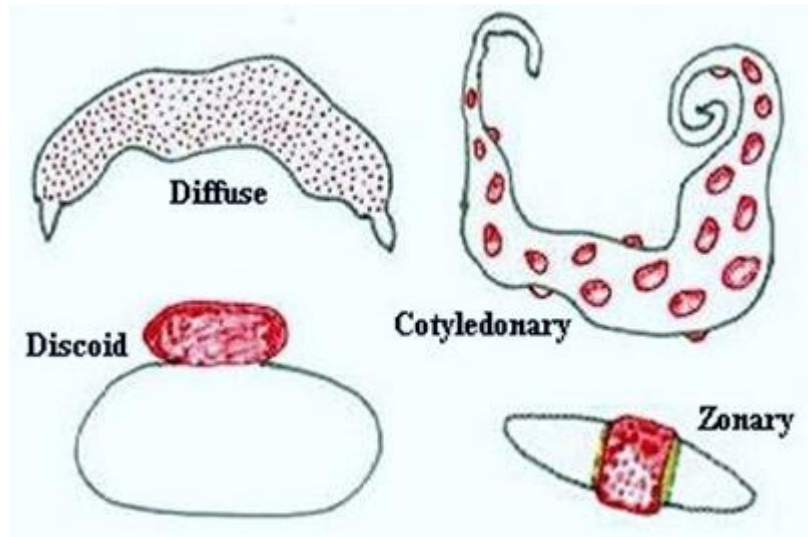
Deciduate type Placenta: Ex: Primates, Rodentia, Insectivora, chiroptera The allantochorionic villi penetrate into uterine valli. They are intimately fused. Hence at the time of birth, the uterus is damaged. Bleeding occurs, the utrine wall enters into formation of placenta is called deciduas.

Basing on distribution of villi

According to the distribution of villi five kinds of placenta are seen.

I, **Diffused type placenta:**Ex Horse, pig,

The villi are uniformly distributed on the surface of blastocyst, except at the extreme ends.



II. **Cotyledonary placenta** Ex Sheep, Cow, Deer.

The villi are arranged in groups. Each group is called cotyledon. Each cotyledon fits into caruncle of uterus.

iii **Intermediate type Placenta** Ex : Caine!, Giraffe.

It is a rare type, it shows free villi on cotyledons. Hence it is called intermediate type placenta

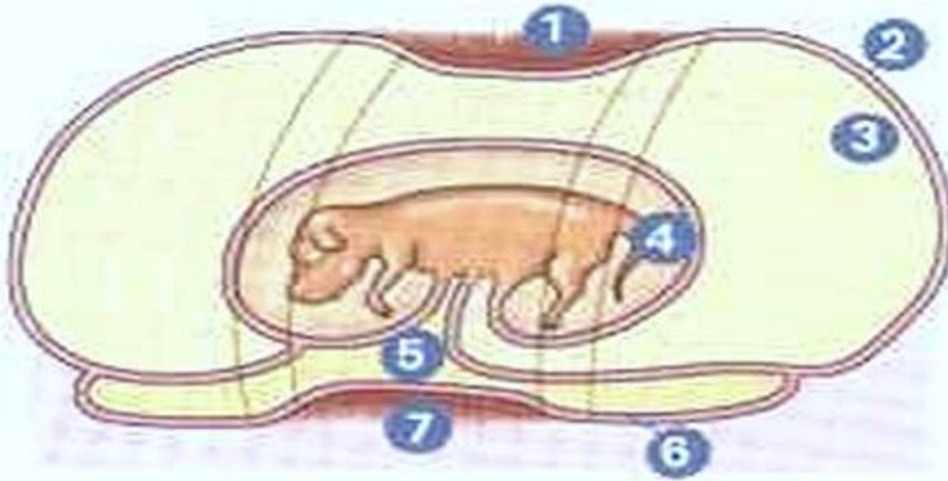
In these three types of placenta during parturition the foetus will not damage uterus.

iv, Zonary placenta: Ex Cat, Dog, Carnivores.

The villi are in the form of transverse zones. In dog a single girdle of villi will be present. In fox two girdles of villi are present. The villi penetrate into uterine wall. Hence during

parturition uterine wall is damaged.

FOETAL ATTACHMENTS IN THE BITCH

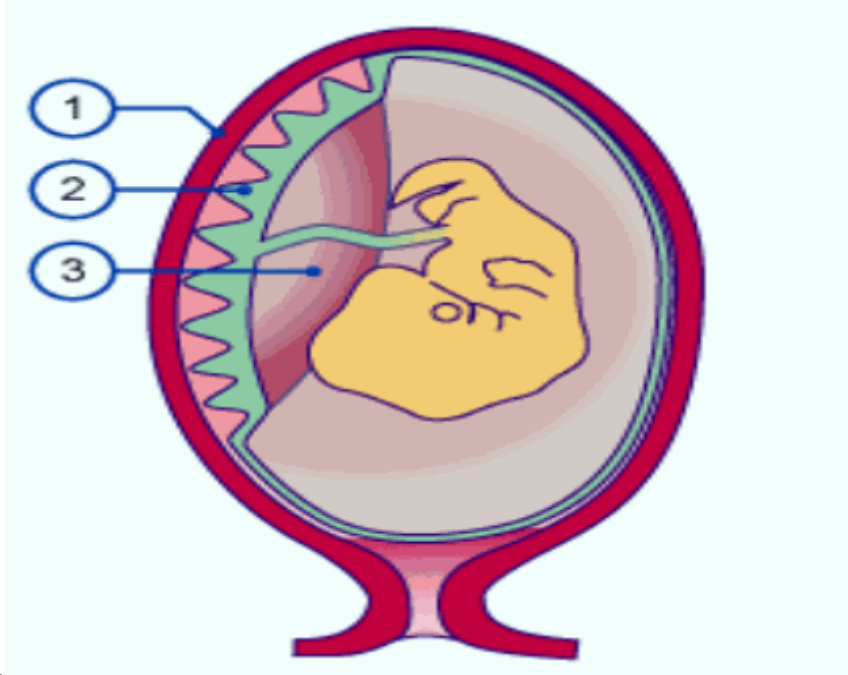


1. *Chorion frondosum*
2. *Chorion laeve*
3. *Allantois*
4. *Amnion*
5. *Vitelline sac*
6. *Rim of placenta*
7. *Endotheliochorial type zonary placenta*

V, Discoidal Placenta: ex Rat, Bat, Rabbit.

On the entire surface of blastocyst the villi are in the form of discs. When the embryo is growing it moves away from uterus hence the with look like a disc. These villi are

Intimately connected with uterus. Hence during parturition much uterine tissue is



damaged.

Placenta classification -Basing on histology:

According to number of layers of cells present between foetus and uterus blood supply the placenta is classified into five types.

a) **Epithelio chorial placenta** : Ex Pig, Horse, (Ungulates Lemmures)

The foetal chorion is in contact with epithelium of the uterus hence it is called epithello chorial placenta. In between foetal, maternal parts six layers are present.

- I) Endothelium of mother blood vessel.
- ii) Maternal syndesnose connective tissue.
- lii) Epitheliurn of mother
- iv) Chorion of foetus.
- v) Foetus connective tissue (syndesnose)
- vi) Endothellum of foetal blood vessel.

If all the six layers are present the placenta is called epithello chorial placenta.

b) **Syndeumose chorial placenta** : Ex Sheep, Cow.

The allanto-chorionic vith will pierce into the uterus of the mother, the chorion will come in contact with syndesnose of mother's uterus. Hence it is called syndesnose chorial.

c) **Endothelio chorial placenta** :Ex Dog, Carnivores. The chàrion of the foetus will come in contact with the endotheli of mother 's uterus, hence it is called endothelio-chorial placenta.

d) **Hemochorial placenta** : Ex: Bat, Man, Primates, Insectivores.

The placental connections are more intimate. The chorion of foetus will float in the blood pools of mother's utiras. Hence it is called haemochorial placenta.

e) **Hemo endothelial placenta** Ex: Rat, Rabbit, Hence guinea-pig will float in mother's blood. Hence it called hemo endothelial placenta.

Functions of placenta:

- 1) Placenta will form a physiological barrier between mother and foetus. It will possess foetal and maternal blood mixing.
- 2) Placenta allows the diffusion of monosacharides, amino adds, hormones, vitamins, oxygen, .carbondioxide, water and other waste materials, because of this it supplies food, oxygen to foetus.
- 3) It works as an excretory organ of foetus. It releases the nitrogenous waste materials into mother blood.
- 4) It works as an endocrine gland. It will secretes lactogen ,progesterone,etc. hormones.
- 5) The placenta will manufacture fructose from glucose.

also read [Parental care in Amphibians](#)