Umbilical cord

- It is a vascular cable that serves as a communication between fetus and its placenta.
- It persist to the end of pregnancy.
- It is covered externally with ectoderm and lined by somatic mesoderm.

Contents of umbilical cord :

- umbilical arteries and veins.
- Allantois stalk.
- Vitelline blood vessels.
- yolk stalk.

All the contents are held together by connective tissue and mucous tissue (Jelly of Wharton**)**

Fate of the contents of the umbilical cord :

(after birth)

1-Two umbilical arteries (carry deoxygenated blood from fetus to placenta) → Two round lig. Of urinary bladder.

2-Two umbilical veins (carry oxygenated blood from placenta to fetus) → Right one degenerates

Left one form round lig. Of liver.

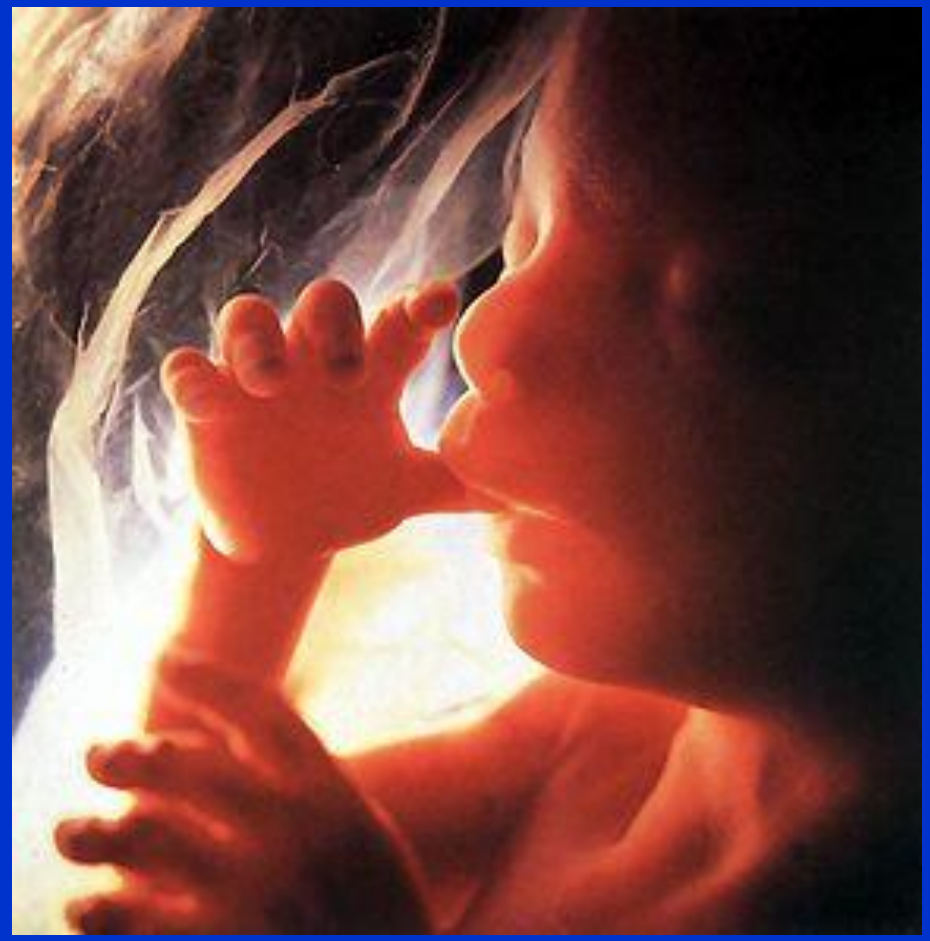
3-Two vitelline veins → Liver sinusoids, hepatic veins, portal vein and part of caudal vena cava.

3-Two vitelline veins → Liver sinusoids, hepatic veins, portal vein and part of caudal vena cava.

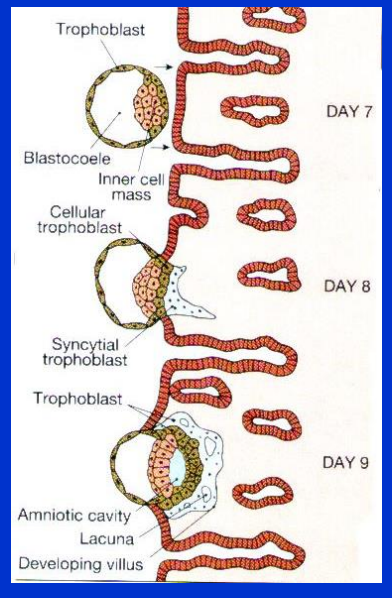
4-Allantois → median lig. Of urinary bladder.

5-Yolk stalk → Mickel’s diverticulum.

Implantation



Implantation



Definition:

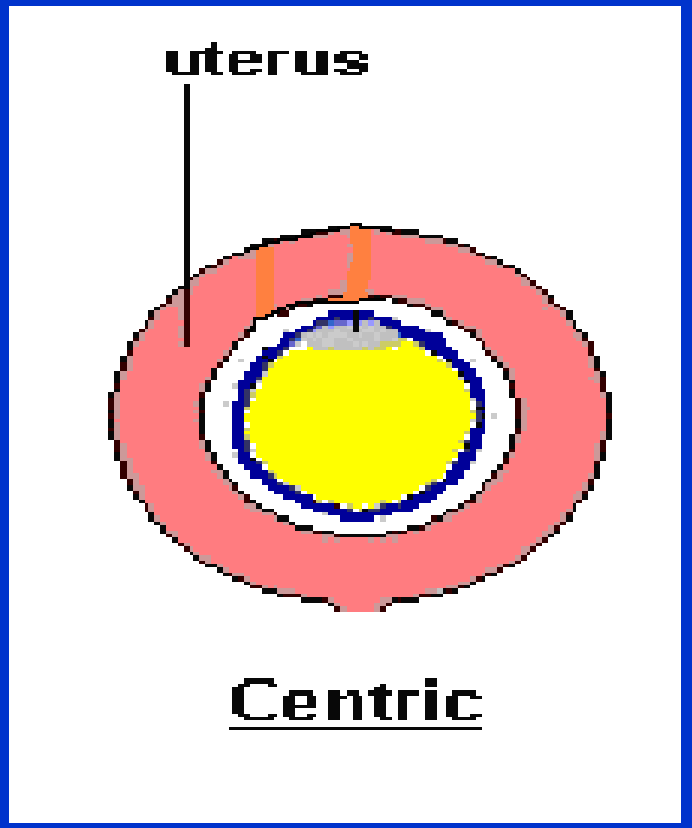
Penetration of blastocyst through superficial layer of uterine endometrium.

Types:

1-Superficial (central):

The chorionic sac lies in the main uterine cavity.

e.g. carnivores, ruminants, horses, and pigs.



2-Eccentric:

The sac lies in a fold or pocket or recess of the uterine cavity.

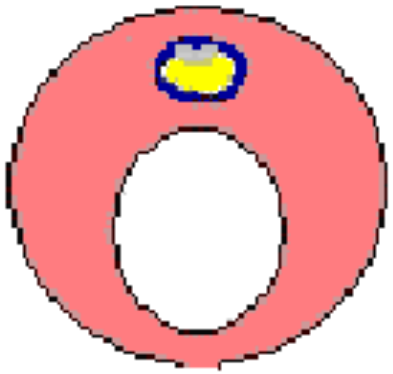
e.g. rats and mice.

Eccentric

3-Interstitial:

The sac penetrates and develops in the substance of the uterine lining.

e.g. Human, guinea pigs and bats.

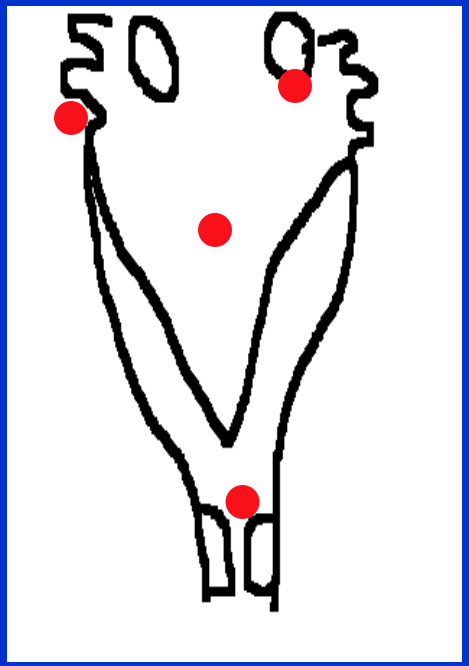


Interstitial

Abnormal implantation (ectopic pregnancy):

Definition:

It means implantation of the blastocyst outside uterine cavity due to hormonal disturbances. The embryo dies.



Types:

1-Ovarian:

on the ovarian surface.

2-Tubal:

In the uterine tube.

If left, it leads to rupture of the tube.

3-Abdominal:

-The fertilized ovum develops in the peritoneal cavity (primary).

-Sometimes the tubal implantation leads to rupture of the uterine tube and the blastocyst releases and develops in the peritoneal cavity (secondary implantation) .

-Therefore it may be primary or secondary.

4-Cervical: In the cervix.

Placenta

Placenta

Definition:

It is an embryonic organ formed to establish a functional relationship between maternal endometrium and fetal membranes of embryo.

It consists of two parts:

A- Fetal part: Chorion.

B- Maternal part: Uterine endometrium.

Functions of placenta:

1-Exchange of gases and metabolites:

So that the placenta acts as:

A-Respiratory organ.

B-Nutritive organ.

C-Selective absorbing organ (as absorption of much iron during haemobiosis).

D-Excretory organ.

2-Protective function:

-Prevents passage of most microorganisms.

-Allows passage of antibodies (immunity).

3-Endocrine organ:

It secretes chorionic gonadotrophin in early stage of pregnancy which stimulates corpus luteum for secretion of progesterone for maintaining pregnancy.

Types of the placenta:

I-According to nature of connection between fetal and maternal sides:

1-Non-deciduate (false) placenta:

-There is loose connection between chorionic villi and endometrium.

- No shedding of endometrium during parturition.

- No bleeding at time of birth.

- Found in horse, pig and ruminants

2-Deciduate (true) placenta:

-The chorionic villi fuse with the endometrium.

-There is shedding of endometrium during partiuration.

-There is bleeding and fall of placenta during birth.

-Found in canines and primates.

3- Contradeciduate placenta:

- Fetal membranes remain in uterus after parturition, resorbed by maternal organism.

- Found in Kangaroo.

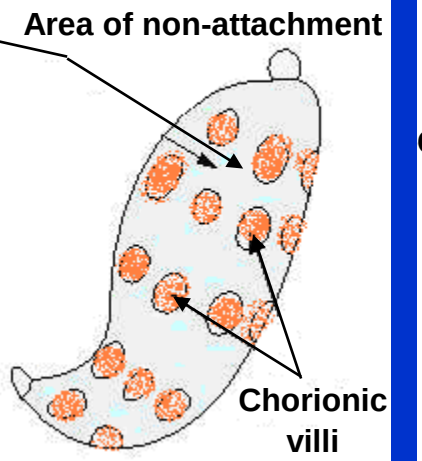
II-Anatomical classification:

Depends upon the distribution of the chorionic villi on the chorionic surface.

Diffuse

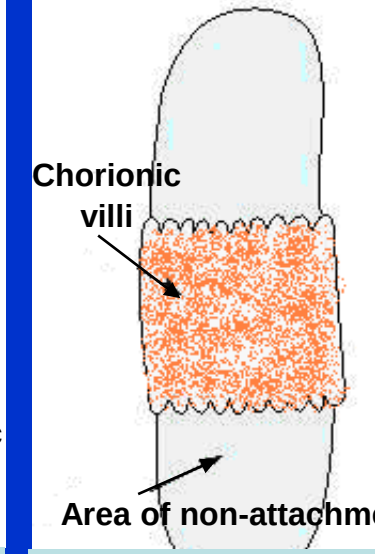
Villi over entire surface (e.g.pig, horse).

Cotyledonary



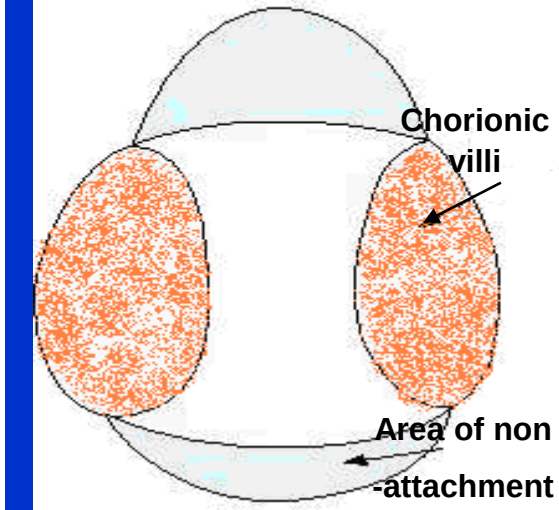
Villi grouped in the form of tufts (e.g. ruminants).

Zonary

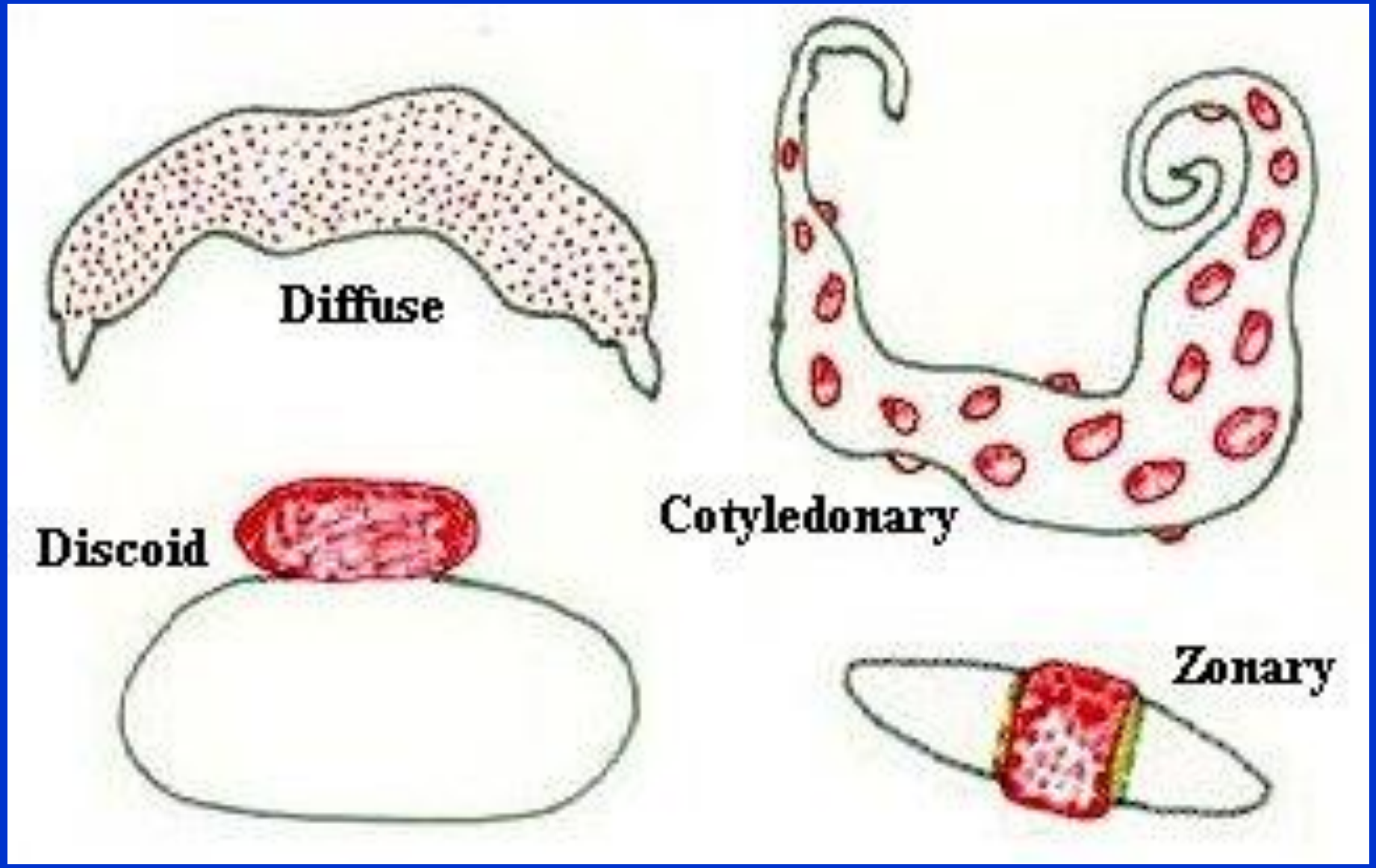


Villi form a girdle-like band (e.g. carnivores).

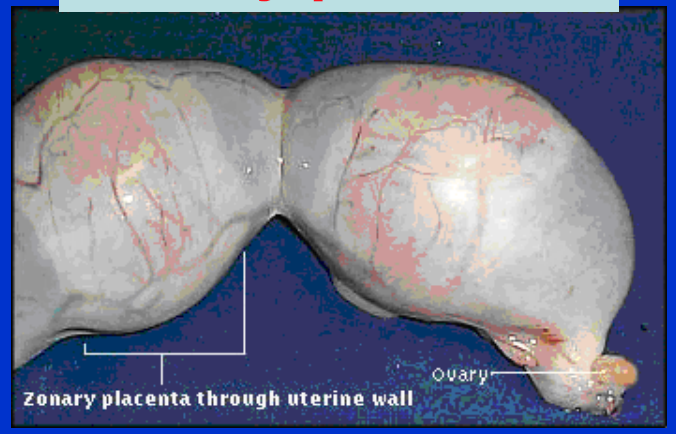
Discoidal



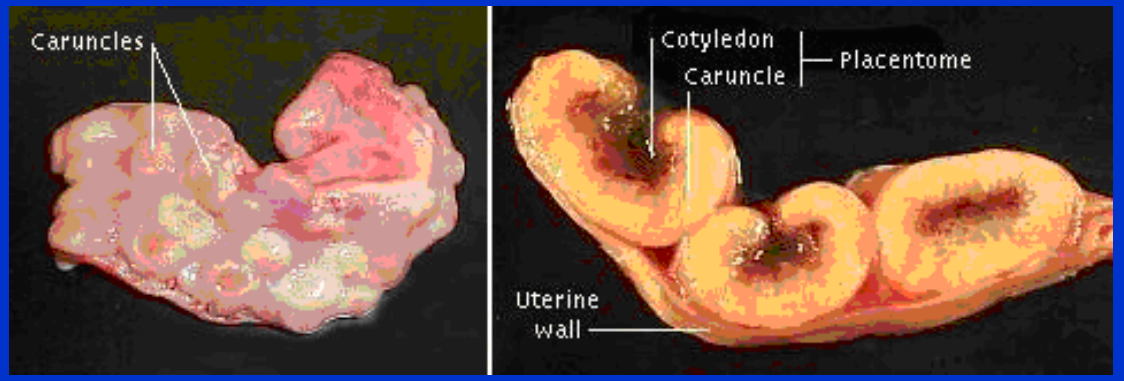
Villi form one or two discs. (e.g. monkey and human).


Diffuse
Cotyledonary
Discoid
Zonary

Zonary placenta

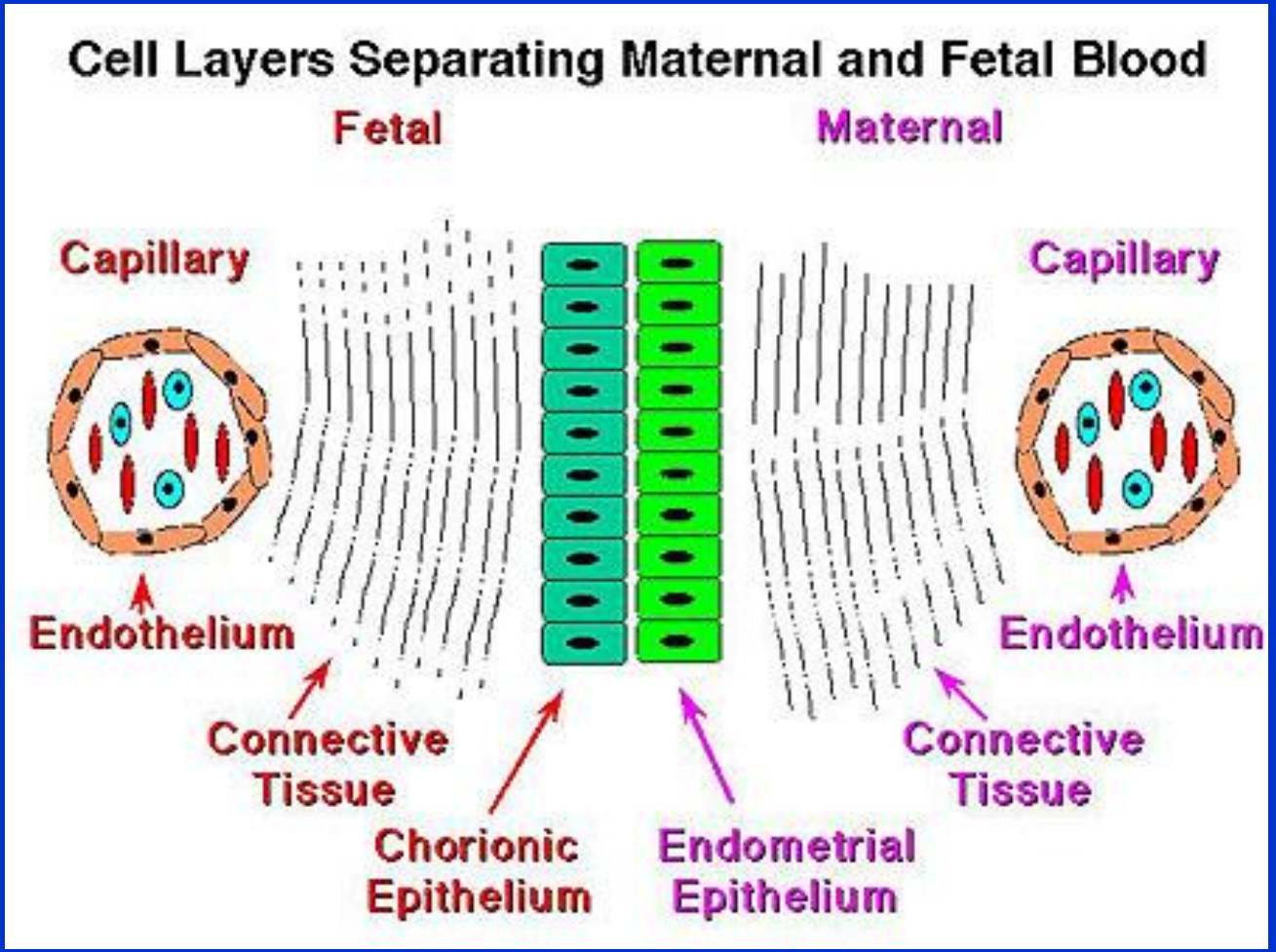


cotyledonary placenta

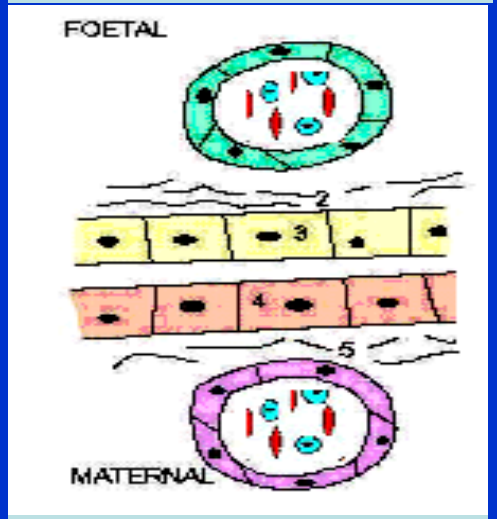


III-Histological classification:

It depends upon the number of layers separating maternal and fetal blood.



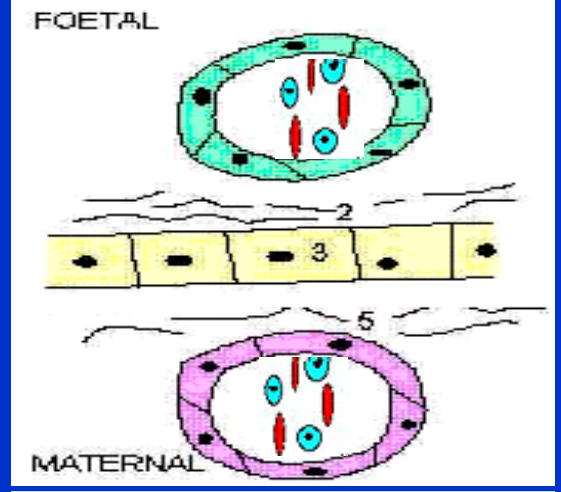
Epitheliochorial



6 layers

e.g. Pig, Horse

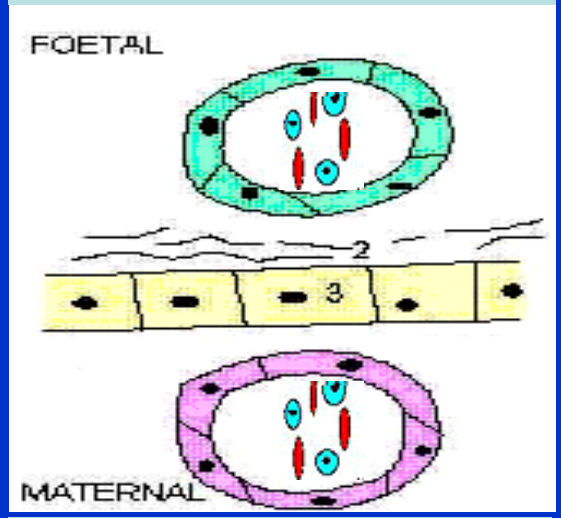
Syndesmochorial



5 Layers

e.g. Ruminants

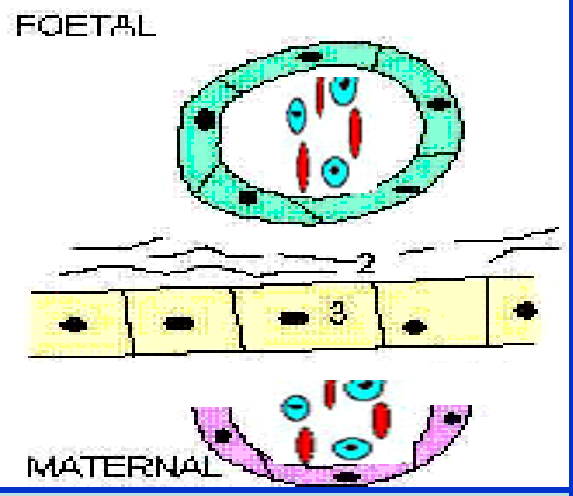
Endotheliochorial



4 layers

e.g. Dog & Cat

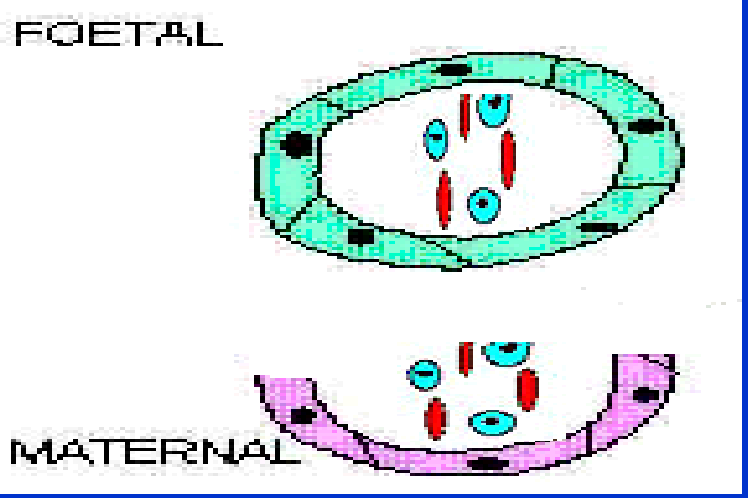
Hemochorial



3 layers e.g.

Human

Hemoendothelial



1 layers e.g.

Rabbit

Thank you…