

damage to the latter, only the foetal part of the placenta is shed and no uterine tissue is lost, it has two types.

(a) Diffuse nondeciduate: → placenta has the villi formed uniformly all over the allanto-chorion, eg. most ungulates, whales, and some primates.

(b) Cotyledonary nondeciduate placenta  
-a: → has the villi formed in separated <sup>of</sup> bunches on the allanto-chorion eg. ruminants.

(3) Deciduate placenta: → <sup>elaborately branched</sup>

The union between the villi and the uterine wall is very close, so that at birth the placenta on detachment pulls out the uterine mucous membrane, thus not only the foetal part of the placenta is shed but the mucous membrane of the uterus is also cast out as decidua, it has three types.

(a) Zonary deciduate placenta: →  
-has villi on one or two broad ring-like zones eg. elephant and Carnivores.

(b) Discoidal deciduate placenta: →  
-has villi on a circular disc on the dorsal side of the foetus eg. rodents, bats, and some insectivores.

(c) Metadiscoidal deciduate placenta  
-has the villi scattered at first, but they become secondarily restricted to a circular disc on the ventral side of the foetus eg. man and apes.

Def.

## Formation of Placenta: →

- ① The egg after being fertilized develops into a blastocyst which consists of an outer layer - the trophoblast enclosing the inner cell mass - the future embryo.
- ② The inner cell mass spreads into an oval patch - the embryonic plate. The inner cell of which form the endoderm or hypoblast.
- ③ villi grow out from the outer wall and form the earliest connection between mother and embryo.
- ④ The embryo now becomes folded off so that upper part of the endoderm forms the lining of the gut while the lower portion following the contour of the blastocyst wall forms the lining of the yolk sac or umbilical vesicle, which contains coagulable fluid but no yolk.
- ⑤ Between the ecto and endoderm of the embryo mesoblast or mesoderm develops, splitting into an outer or somatic and an inner or splanchnic layer. The cavity between these is the incipient coelom.
- ⑥ A double fold of mesoderm carrying with it a single sheet of ectoderm rise up round about the embryo arching over it.
- ⑦ The inner layer of the double fold meet in a cupola and unite to form a layer lying lying internally to the trophoblast - the chorion.
- ⑧ The mesoderm surround the embryo beneath the trophoblast while a splanchnic layer of mesoderm grows round about the endodermal yolk sac.



(9) From the hind wall of the gut tube grows out an endodermal sac - the allantois. It is lined by endoderm but over it is a layer of mesoderm.

(10) The allantois unites with chorion and therefore with the trophoblast as well to form the fetal part of the placenta without growing vascular processes or villi which burrow into corresponding depressions or crypts on the wall of the uterus.