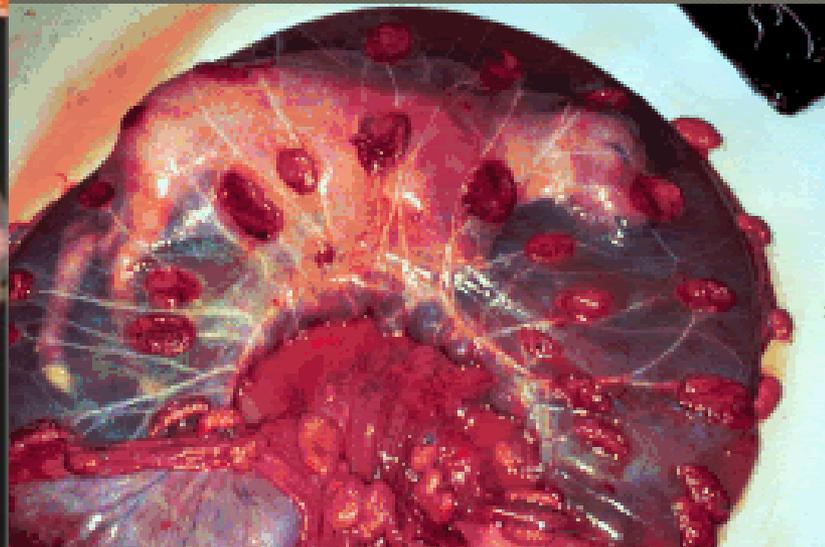
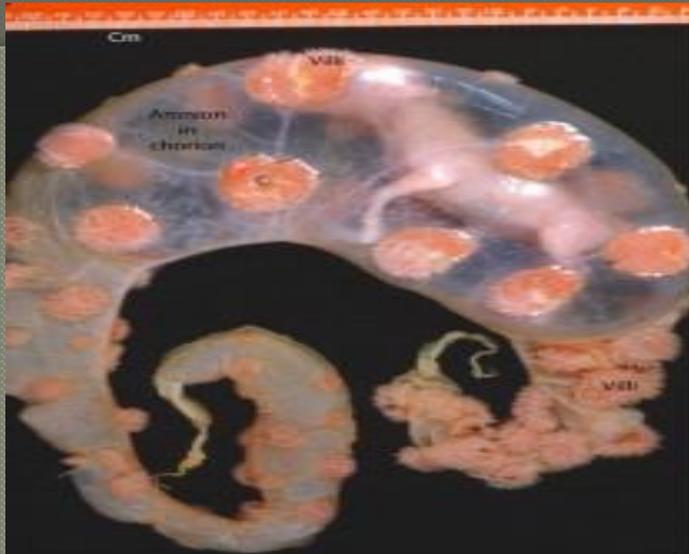


PHYSIOLOGY OF PREGNANCY



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- Pregnancy in mammals is the result of millions of years of evolutionary changes which lead to the development of a new organ - placenta.
- Co-ordination of endocrine system is directly responsible for successful pregnancy.
- In late pregnancy, placenta assumes the role of an endocrine organ.

Changes in the uterus

- Uterus serves as an incubator during pregnancy.
- Gonadal hormones act primarily on the uterus.
- Even during proestrus, estrogen levels rise and act on endometrium, cause proliferation of its epithelium.
- Myometrium responds to rising estrogen levels.

- ① Soon after ovulation, rising level of progesterone enhances and acts synergistically with existing estrogen level to bring about additional endometrial and myometrial changes.
- ② The uterine glands becomes branched and coiled and secretes thick mucus material which can serve as nutrient medium.

- ① After ovulation & development of corpus luteum, the progesterone output is sufficient to cause quieting of myometrium and a more favourable physical environment for zygote.
- ② The uterine milk, consisting of uterine gland secretions, uterine tubule fluid and cellular debris provides ideal nutritional medium for the zygote.

Phases of gestation

- ① 1. Period of ovum - 0 to 15 Days.
- ② 2. Period of embryo - 15 to 45 Days (Most critical period).
- ③ 3. Period of Fetus - 46 Days to Parturition (largest period).

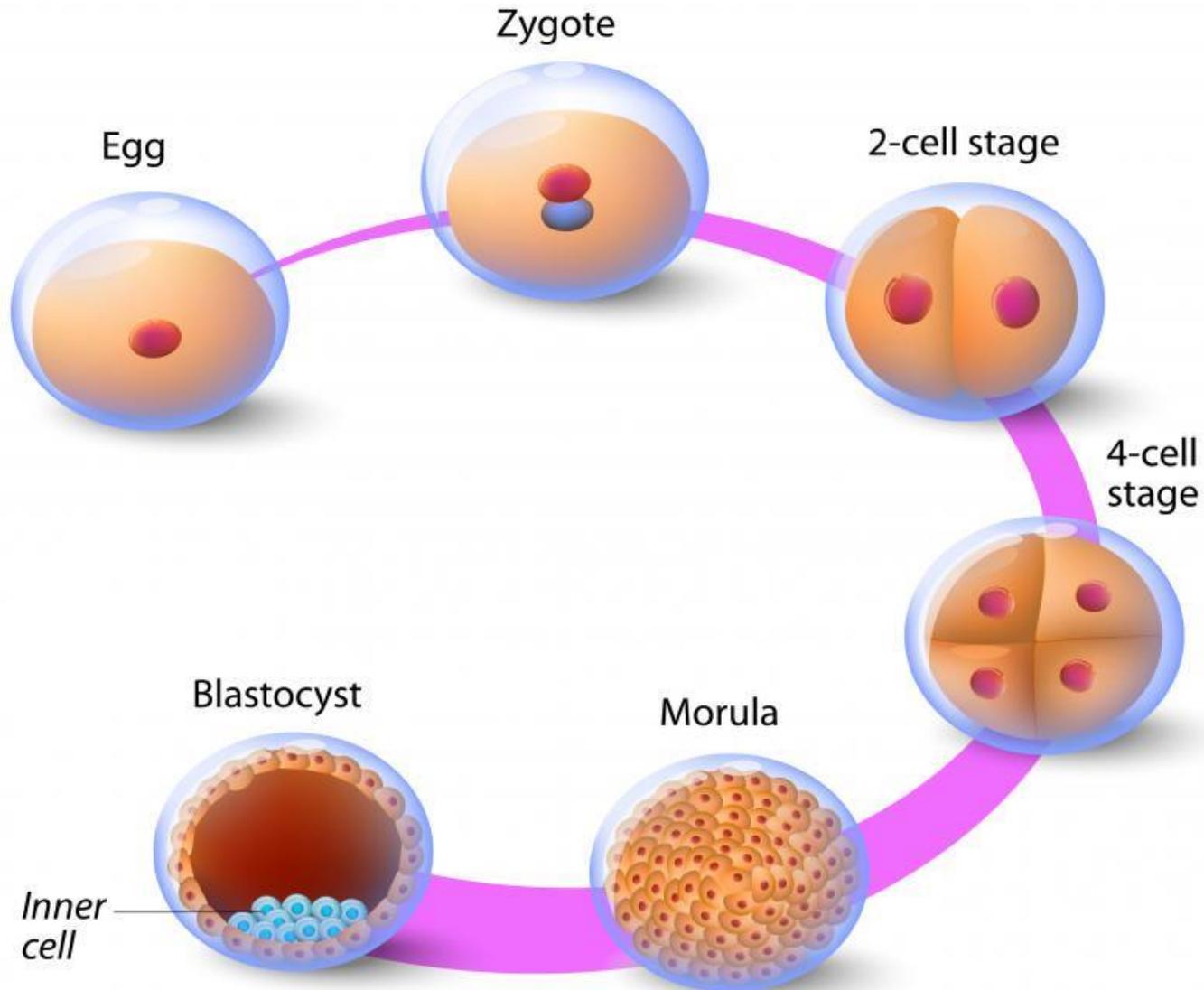


Period of ovum

- ◉ Begins with ovulation.
- ◉ Followed by union of male and female gametes.
- ◉ Zygote survives on uterine milk.
- ◉ Zygote is one-cell stage, quite large having a low nuclear: cytoplasmic ratio.

- To attain a ratio similar to somatic cells, cell divisions occur without an increase in cell mass. This process is referred to as “cleavage”.
- Reaches 16-cell stage within 4 days.
- At the end of 4-5 days, reaches utero-tubal junction and passes into uterus.
- Uterus is an incubator with sufficient uterine milk.

DEVELOPMENT OF THE EMBRYO



BOVINE EMBRYOS



1 - cell
1 day post oestrus



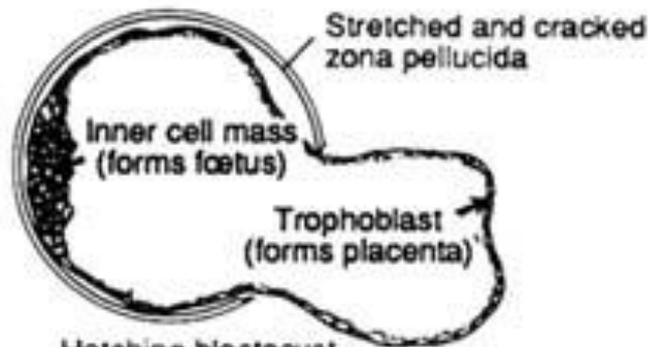
8 - cell
days 3-4 post oestrus



Morula
days 5-6 post oestrus



Blastocyst
days 7-8 post oestrus



Hatching blastocyst
days 8-9 post oestrus

- By 8th day post ovulation, blastula begins to form.

- On one side, inner cell mass (embryo proper) accumulates.
- Thin single layer extending around the rest of sphere (trophoblast) which finally develops into extra embryonic membranes or fetal placenta.

- Until 3rd week, blastocyst moves freely in the uterus.

- Developing membranes becomes elongated to conform to inner dimensions of the uterus.
- These provide a large surface area for absorption of nutrient materials from the uterine surface and permits the excretion of waste substance from the zygote.

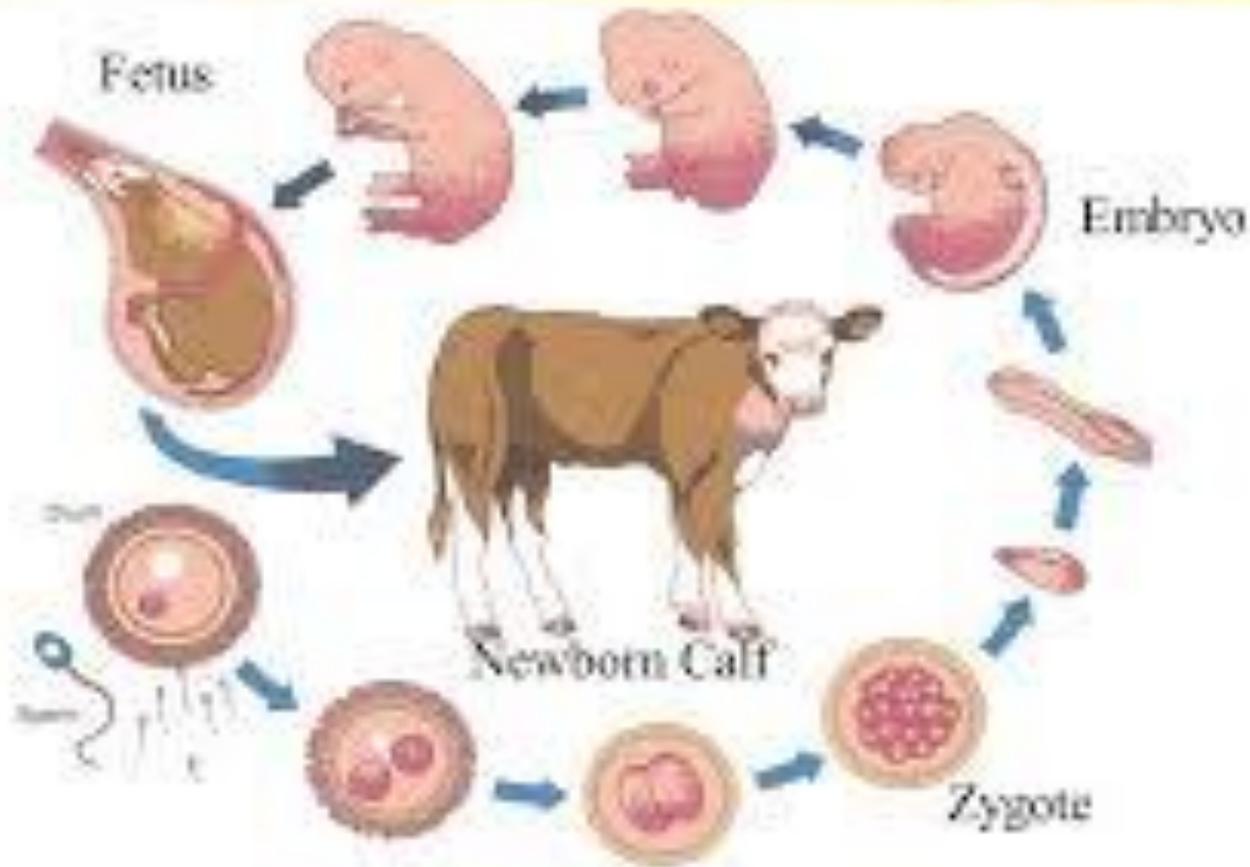


Period of embryo

- Lasts from 15-45 days in cattle.
- characterized by the formation of the organ systems of body, development of the embryonic membranes and **implantation/nidation.**

D. List stages of development from conception to parturition.

Stages of Development



- ① During early period, zygote nutrition continues to be from the uterine fluids.
- ② By the end of this period, placenta is formed which firmly attaches the embryo to the uterus.
- ③ Appendages & organs develop by end of this period.

Period of fetus

- ◉ Longest period in all species.
- ◉ In the cow, from 46th day till parturition.
- ◉ Tremendous gross changes occur in the uterus, placenta and fetus.
- ◉ Nutritive requirements of fetus are high.

**THANK YOU
FOR YOUR
PATIENCE**

