



Ovulation Failure and its Treatment



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Ovulatory Defects/Failure

- **Estrus period in cow = 18-24 hours.**
- **Ovulation (Cow) → 10-12 h after the end of estrus**
→ 18-26 h after the ovulatory LH peak.
- Usually only one or occasionally two follicles ovulate; other follicles regresses.

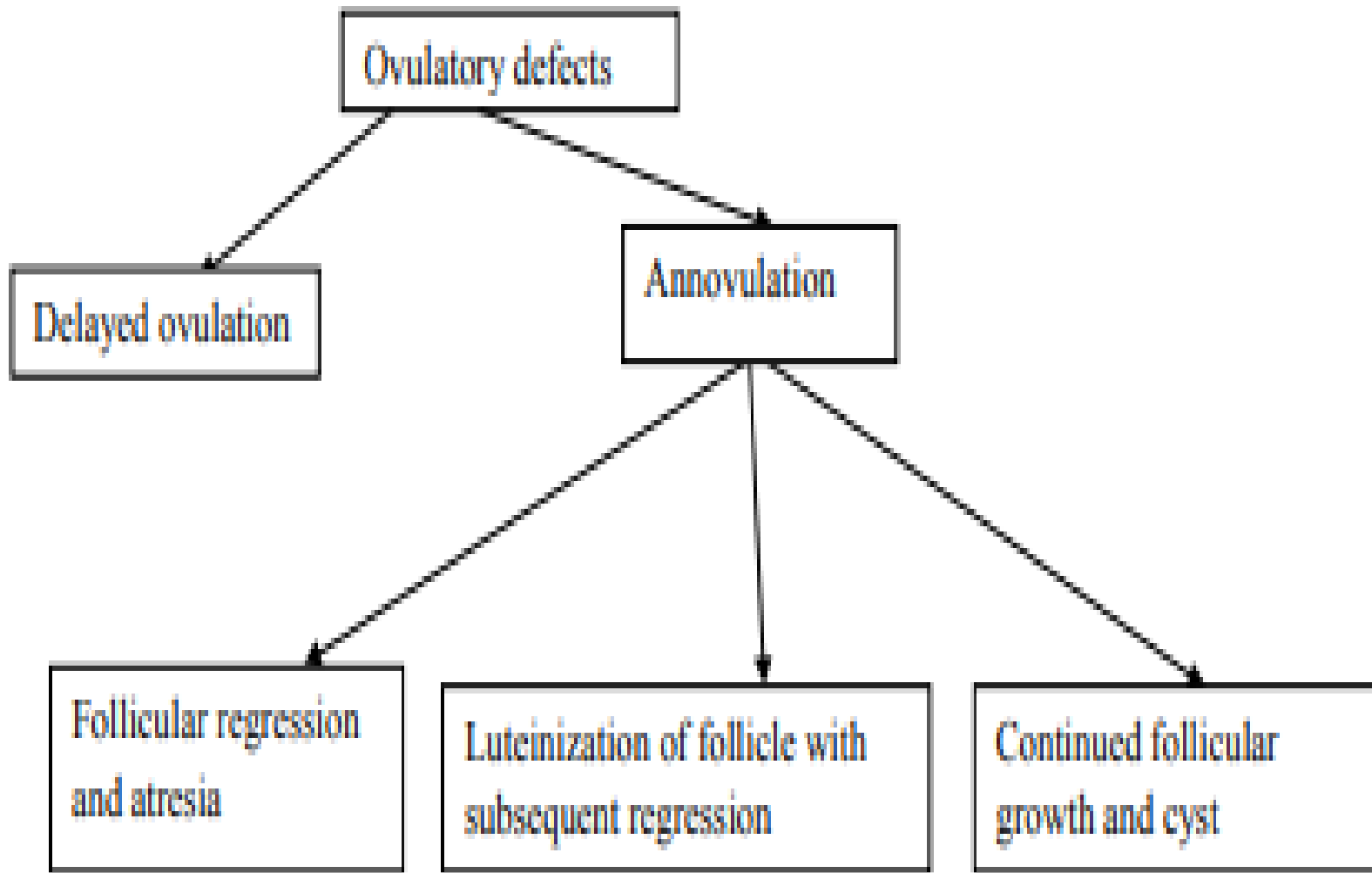


Figure 1: Ovulatory defects [3].

Ovulatory defects

- Ovulatory defects can occur due → endocrine deficiency or imbalance
- **Complex interaction:** Ovarian hormones → anterior pituitary → hypothalamus.
- Thus if the quantity of pituitary hormone released is insufficient or its timing is incorrect (this is particularly true of LH), then ovulation is delayed or fails to occur .

Delayed ovulation:

- **Delayed LH surge → Delayed Ovulation → failure of fertilization.**
- **Diagnosis :** rectal palpation of the ovaries.
- Delayed ovulation is generally assumed to be one of the causes of failure of conception in cyclic cow.
- **Treatment** has consisted of using those hormones that might hasten the timing of ovulation.
- GnRH Administration causes a rapid rise in FSH and LH → peak within 30 to 60 min and return to pre injection values within 4 h.

Anovulation:

- Anovulation has been defined as the absence of ovulation which leads to both **true anoestrus or to cystic ovarian disease.**
- If cows are examined per rectum during the first few weeks after calving, a number of enlarged ovulatory follicles can often be detected.
- **Diagnosis:** rectal palpation or Ultrasonography
- **Treatment :** GnRH

Treatment

Anovulation/ Delayed Ovulation= → GnRH
(Buserelin acetate) → 20 mcg IM

Trade Name: Receptal, Gynarich

→ hCG → 1500 I.U. IM

→ Trade Name: Chorulone, Ovalyse, Pubergen

→ Given at the time of AI

Cystic ovaries:

- Ovarian dysfunctions (Cysts) → **early postpartum period** → transition from the non-cyclic condition to regular cyclicity.
- Cystic follicles develop due to a **dysfunction of the hypothalamic pituitary-ovarian axis**.
- Multi factorial etiology, in which genetic, phenotypic and environmental factors.
- COF formation may result from defects in ovary/follicle and the hypothalamus/pituitary as well

Cystic ovaries:

- The LH released from the hypothalamus-pituitary is altered.
- The pre-ovulatory LH-surge is either absent, insufficient or occurs at the wrong time during dominant follicle maturation, which leads to cyst formation.
- Altered feedback mechanism of estrogens on the hypothalamus- pituitary → abnormal GnRH/LH release and cyst formation.

Follicular cyst:

- “Follicular structures of 2.5 cm or larger that persist for a variable period in the absence of a corpus luteum is known as **follicular cyst**”.
- Any follicular structure on the ovary in the absence of luteal tissue, larger than normal follicular size that persists for a significant period of time and affects the estrus cycle of the animal.

Follicular cyst:

- They “develop when one or more follicles fail to ovulate and subsequently do not regress but maintain growth and steroidogenesis”.
- **Follicular cysts are anovulatory structures** so, as long as they persist, cow will remain infertile.
- **Holsteins** are the most susceptible to develop a cystic condition in high-yielding dairy cows

Follicular cyst:

- “The positive feedback of estradiol on release of gonadotropin releasing hormone (GnRH) is compromised”.
- Pituitary gland → **preovulatory LH surge that normally induces ovulation does not occur.**
- A surge of follicle-stimulating hormone (FSH) → dominant follicles grow to a larger size.
- These oversized follicles are termed follicular cysts → produces high concentrations of **estradiol and inhibin**, → delay in follicular turnover and are responsible for the persistent cystic condition.
- **They alternately grow and regress but fail to ovulate.**

Clinical signs of Follicular cyst

- **Nymphomanis:** display excessive and prolonged signs of estrus and short interval between two successive oestruses.
 - Excess swelling of vulva.
 - Sexually aggressive as bull → **Buller cow**
 - **Relaxation of sacro-sciatic ligament**
 - May be vaginal prolapse when cow sits down.
 - Long standing cases: Relaxation of pelvic ligaments causes tipping of pelvis and elevation of tail head. → **sterility hump.**
- **Hydrometra /mucometra**

Luteal cyst:

- Luteal cystic ovarian disease is characterized by enlarged ovaries with one or more cysts, the walls of which are thicker than those of follicular cysts because of a lining of luteal tissue.
- Cysts with thicker walls produce high levels of progesterone.
- They are smooth and rounded, with a spherical cavity that is lined by a layer of fibrous tissue surrounded by the luteinized cells .
- “Luteal cysts are considered anovulatory cysts.

Luteal cyst:

- When compared to follicular cysts, luteal cysts are more likely to persist over long periods of time and can lead to nymphomania in some animals
- Luteal cysts “develop when ovulation fails to occur and the theca undergoes luteinization”.
- The luteal cyst occurs when the cells of the follicular cyst (granulosa and theca) become luteinized and start producing progesterone.
- Luteal cyst incidence increases with age and most often affects cows with high milk production.

Clinical signs of Luteal cyst

- Cessation of the cyclical activity → **anestrus**
- **Long standing:** masculine body and attempt to mount the other cows but unlike nymphomaniacal cow, they will not stand when being mounted by other cows → **Virilism.**
- Persist for long period.

Treatment

- **Follicular cyst:** → is treated with hCG at a dose 3000 to 4500 IU.
- GnRH at a dose of 20 μg → more than 80% of the cows come in to estrus within 18 to 24 days.
- Manual rupture.

- **Luteal cyst:**
- PGF2 α and its analogue at a dose of 25 mg/250 μg .



THANK YOU