REPRODUCTIVE DISORDERS/DISEASES IN FEMALE

In simple language this can be defined as disease affecting reproduction. In other words it is any condition that leads to infertility or sterility.

**Infertility**: inability to produce viable young one within a stipulated period characteristic to that species.

**Sterility**: Complete inability to produce young one due to some permanent factors.

The reproductive diseases can be broadly classified into three categories:

A. **Anatomical or Structural defects**

B. **Functional Defect**

C. **Infectious Causes**

ANATOMICAL/STRUCTURAL DEFECT

Anatomical or structural defect could be congenital or acquired.

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Congenital Defects: -

Aplasia of ovary:

Means complete lack of development of the ovary. It can be unilateral or bilateral. If bilateral the animal will be sterile. In case of unilateral aplasia the animal may reproduce but the animal will be infertile and it is not economically viable to maintain such an animal.

Hypoplasia of the ovary:

Means incomplete development of the organ and the organ is very small. It could be unilateral or bilateral, complete or partial.

Freemartins:

Sterile female born co-twin to a male calf. This is due to intermixing (chimerism) of blood during their foetal life.

Agenesis or aplasia of F. tube - It could be unilateral or bilateral, complete or segmental.

Atresia of vulva/ Narrow vulva: The vulval opening may be absent which has to be corrected surgically. In case of narrow vulva there will be normal pregnancy but will lead to dystocia during parturition. This can be corrected through episiotomy.

Hermaphrodite/Intersex: Presence of gonads of both the sexes. This is due to genetic aberration.

White Heifer Disease:
No single lesion is descriptive of this condition. The disease may constitute an imperforate hymen and segmental aplasia of the uterus. Absence of anterior part of the vagina, cervix or the uterine body and horns (Absence of one horn is called uterus unicornis) are a common feature in this case.
Acquired Defects: -

Ovaro-bursal adhesion may be due to following conditions:

i. Infectious causes e.g. extension of peritonitis due to traumatic reticulitis into the ovaro-bursal area.

ii. Peritoneal tuberculosis

iii. Defective manipulation of ovaries like enucleation of C.L leading to bleeding and adhesion.

Adhesion of uterus: Adhesion of uterus to omentum, intestine or to abdominal wall may occur following caesarean operation.

Stenosis of Cervix: may occur as a result of severe cervicitis or due to traumatic injuries. Forceful introduction of AI gun also leads to this condition.

Fracture of pelvis: This leads to malignment of the pelvis. This increases the chances of dystocia.

Tumours: of the vagina, cervix and uterus causing obstruction.

FUNCTIONAL/ PHYSIOLOGICAL DISORDERS

1. Anoestrus: is a condition when an animal doesn’t come to heat and is the most common condition affecting fertility in cattle.

A. True Anoestrus: is when ovary is non-functional and will be devoid of any palpable structures. Anoestrus is most commonly observed after parturition and post service when conception does not occur.

Causes:

- Inadequate or lack of pituitary hormone.
- Malnutrition. This is the most common cause of anoestrus and encompasses most of the other causes. Inadequate level of carbohydrate, proteins, and minerals like P, Cu, Co, Fe etc., and vitamins like vitamin A. may cause anoestrus.
- Chronic debilitating diseases such as heavy endoparasitism.
Seasonal influences - it has been observed that the incidence of anoestrus is more common during the winters. This could be correlated to malnourishment during the lean seasons and also attributed to the amount of light available in winter.

**Treatment:**

- Improved nutrition
  - Cereals, concentrates and mineral mixtures.
  - Periodic deworming.
- Prajana capsule - 3 capsule x 2 days+ Cofecu Tab. 5 Tabs X 10 days to be repeated after 12 days if the animal does not come into heat.
- Oestrogen therapy - Inj. vetoestrol -10-15 mg I/M.
- GnRH - Inj. Buserelin (Receptal) - 5 ml I/m.
- Progesterone + oestrogen - CIRD- B Vaginal insertion device. to be removed after 12 days.

**B. Anoestrus due to Persistent Corpus Luteum**

Corpus Luteum is responsible for maintenance of pregnancy through progesterone it secretes. It is functional and persists on the ovary only during pregnancy if not it regresses. If it persists in nonpregnant animals it is termed as PCL or Retained CL.

Retained CL is often associated with other pathological conditions of the uterus, which causes the uterus to act as gravid uterus.

- Mummification
- Maceration
- Pyometra
- Early embryonic death.
- Luteal cyst
Mummification:

It is a condition wherein the foetal fluid and soft tissue are reabsorbed leaving just a mass of bone and skin tightly enclosed by the contracted uterine walls.

Causes: No definitively known cause. Various theories are:

1. Genetic factor
2. Infection and
3. Torsion of umbilical cord

This could occur at any time of gestation, more commonly from 3rd. month of gestation. The condition is not diagnosed until the end of gestation period because the animal is in anoestrus due to PCL and the owner thinks the animal is pregnant. This can be diagnosed by rectal examination. A tightly enclosed mass of the conceptus can be felt.

Treatment

- Oestrogen injection- Stilbestrol- 40-80 mg I/m, Estradiol - 5 -8 mg. Oestrogen brings about following changes, which lead to expulsion of conceptus, uterine contraction, relaxation of cervix and knocks off CL. The conceptus and uterus are sterile in mummification.

Maceration: Condition wherein the foetus succumbs to bacterial or viral infection resulting in death, emphysema and maceration characterised by abortion or dystocia. It is more likely to result in dystocia due to insufficient dilation of cervix.

Symptoms: Foul, fetid reddish grey vulval discharge. On rectal examination an emphysematous foetus or macerated bones could be found.

Treatment:

- Expulsion using traction if cervix is dilated.
- Oestrogen inj. daily for 4-7days until the cervix dilates, if cervix is closed or inadequately dilated.
- Supportive treatment with antibiotics.
C. Anoestrus Due to Undetected Heat/ silent heat:
Inability or ignorance of the owner to detect heat. It is more common with animals with silent or mild heat. The weak heat or silent heat may be attributed to inadequate oestrogen level. This can be ascertained only by rectal palpation and detecting CL, GF or ovulation fossa on the ovaries and changes in the reproductive tract. It can also be detected by using a teaser bull.

Treatment:

- Oestrogen Inj. at 17th days of the oestrus cycle and repeated on the 20th day.
- Improved nutrition

Repeat breeding:

Means cow coming into repeated heat in spite of services.

Causes:

1. Early Embryonic death:
In this case the retention of CL of pregnancy, which has been terminated early, occurs. This is usually encountered during 90-120 days of gestation where the embryo is too small to be detected when aborted or it may be reabsorbed. This may be a characteristic feature in served cows coming into heat after a period longer than the normal oestrus cycle.

Treatment

- Improved nutrition
- Check for diseases like Trichomoniasis and Vibriosis and treat them
- Inj. receptal 11 days after insemination is known to improve embryo survival.

2. Anovulation:

Ovum not released from ovary. The animal has normal cycle, normal reproductive tract but fails to conceive. This is due to:

1. Inadequate level or absence of L.H.

2. Ovaro-bursal adhesion. It may be diagnosed by palpation of matured GF on the ovary more than 48hrs after the end of estrum
Treatment:

- LH preparations (HCG- human chorion Gonadotrophin)- 3000 IU. I/V. when the animal is in heat.
- Inj. Receptal - 5 ml l/m.
- Improved feeding.

3. Delayed Ovulation:

Ovulation takes place 48-72 hours after the onset of oestrus but the spermatozoa would be dead by then.

**Cause**: Due to low level of LH.

**Treatment**: As for anovulation.

4. Cystic Ovaries:

Is one of the most common causes of infertility in dairy cows it is seen more commonly in the high producers at around 15-45 days after calving.

i) **Follicular cysts**

Are anovulatory follicles that persist on the ovary and is characterised by either nymphomaniac or anoestrus. Follicular cysts are multiple, thin walled cyst on both ovaries.

ii) **Luteal cysts**

Are anovulatory follicles partially luteinised and persist for a prolonged period and is characterised by "Anoestrus". Luteal cysts are thick walled and more often single.

**Cause**:

1. Failure of hypophysis to release sufficient amount of LH to produce ovulation and proper development of CL.

ii) Repeated use of oestrogen is known to induce cystic ovaries.
Clinical Signs:

In Follicular cyst:

- Frequent, irregular, prolonged or continuous heat.
- “Buller cow” characteristic i.e. may be aggressive as a bull in seeking out and mounting a cow in heat.
- Relaxation of the sacro-sciatic ligament.
- Relaxation of the pelvic ligament and tipping of the tail head long-standing cases. This condition is known as “sterility hump”.
- The cow becomes heavy, thick necked like a steer. This condition is called as “Adrenal virilism”.
- Hydrometra and mucometra in long standing cases.

In Luteal cyst:

- Anoestrus

Treatment:

For Follicular cyst:

- Inj. GnRH - Receptal - 7 ml I/M.
- LH preparations

For luteal cyst:

- Inj. GnRH.
- Inj. PGF2 alpha- 25 mg I/M - luteal only.
- Inj. LH

Manual removal or enucleation of the CL could be done but is risky.
INFECTIOUS CAUSES

Common infectious diseases affecting reproduction are:

- Endometritis
- Metritis
- Pyometra
- Cervicitis
- Vaginitis
- Granular-vulvovaginitis
- Oophoritis
- Puerperal metritis
- Brucellosis
- Vibriosis
- IBR-IPV
- Leptospirosis
- Listeriosis

**Endometritis:** Means the inflammation of endometrium. Both metritis and endometritis follow abnormal parturition like abortion, retained placenta, premature birth, dystocia etc.

**Symptoms:** Mucopurulant discharge from the uterus. During oestrus flakes of pus is noticed along with the mucous. On rectal examination the uterus will be slightly large, heavy and thick walled. The oestrous cycle length may vary.

**Treatment:**

- Mild antibiotic infusion into the uterus.
- Flushing of uterus with antiseptics.
- Diluted iodine solution infusion.
- Antibiotics I/M

**Pyometra:**

Accumulation of pus in the uterus. Failure of estrum due to retained CL. This occurs following uterine infection post calving and post service.

**Causes:** Trichomonas, Corynebacterium pyogens
Symptoms: Anoestrus, Presence of mucopurulant discharge in the uterus, cervix is relaxed hence the discharge may be noticed externally.

Treatment:

- Knock off the CL - PGF2 - 25 mg i/m
- Oestrogen - contraction of uterus, which expels the pus.
- Antibiotic infusion.
- Uterine douche with mild anti septic solution like P.P, weak iodine etc.

Cervicitis:
Inflammation of cervix is associated with metritis or following abnormal parturition through vaginal contamination.

Symptoms: External os is oedematous, swollen, prolapsed external folds. Reddish mucopurulant cervical mucosa.

Treatment:
Painting with Lugol’s iodine.
Uterine douche.

Vaginitis: Often secondary to metritis or cervicitis. Also as a result of trauma and laceration.

Causes:

- Non-specific infection like Strep.cocci, Staph.cocci, Corynebacterium.
- Specific causes like IBR-IPV, Trichomonas, and Vibriosis.

Symptoms: Mucopurulant yellow grey pus is discharged through vulva at irregular interval. On vaginal examination exudate is noticed on the vaginal floor, vaginal wall is inflamed, congested and oedematous.

Treatment:

- Flushing of vagina with mild antiseptics
- Antibiotic infusion.
Puerperal metritis:

Metritis that occurs within a few days of parturition. It is associated with uterine inertia and is accompanied by retention of placenta. This is caused by bacteria like Corynebacterium, Actinomycosis, and Strep.cocci.

Symptoms: Affected animals show both local and general symptoms.

Local: Fetid reddish serous vaginal discharge accompanied by frequent expulsive straining, uterus contains large volume of exudate, and vulva and vagina is congested and oedematous.

General: Anorexia and elevated body temperature.

Treatment:
- Flushing of uterus with mild antiseptic solution.
- Systemic antibiotics.

Granular vulvo-vaginitis:

It is an infectious disease of vulva and vagina and is characterised by development of small elevated pustules or granules. The lesions are more common on the vulva than in vagina. In acute cases the pustules are highly inflamed causing a mucopurulant discharge, which may hang, or mat the hair coat around the tail.

Treatment: Flushing with antiseptics. Antibiotics including local application.

Oophoritis/Ovaritis

Inflammation/infection of ovary.

Causes: i) Secondary to trauma
- ii) Infection through uterus
- iii) Extension of infection through uterine walls

Treatment: Note easy. Supportive treatment. If infection extended through uterus treatment of the condition.
**IBR-IPV:**

This is a nonvascular viral disease characterised by papules or pustules but no vesicle that easily coalesce to form a diphtheritic membrane that detaches later leaving ulcers in the mucosa of vulva, vestibule and vagina. The cow shows elevated temperature for several days, oedema, and pain on urination, a yellowish serous to purulent discharge from vulva.

**Treatment:** Local flushing with antiseptics

- Application of antibiotic ointment locally
- Supportive treatment with antibiotics.

**Brucellosis:** (Bang’s disease). This disease is contagious as well as infectious. It is caused by the organism called Brucella abortus. It is usually found in pregnant uterus but can also localize in other tissues such as the udder or in the testes. The disease is responsible for 85% of cattle abortions. It results in abortion between five and 8 months of pregnancy and can spread through contaminated feed, water, bodily discharges including milk. An estimated 25 to 30 percent of the animals that come in contact with this disease become either temporarily or permanently sterile. It can effectively be prevented by calf-hood vaccination.

**Clinical signs:** Abortion in 3rd.trimester of gestation and retention of placenta in the subsequent parturition. Foetal membranes are oedematous, haemorrhagic and necrotic.

**Diagnosis:**

- Bang’s ring test on milk
- STAT (standard agglutination test). Titre of 1:40 is considered positive.
- Isolation of organism from foetal membranes and lungs.

**Control:**

- Through vaccination with calf hood vaccine at 4-6 months of age.
- Test and cull the positive reactors.
- Proper disposal of aborted foetus and membranes.
- Sexual rest for at least 90 days
**Trichomoniasis/Bovine venereal.** The disease is caused by a single celled protozoon - *Trichomonas foetus*. The organism lives in the sheath of the bull and the vagina of the cow. The disease is characterised by low pregnancy rate, a profuse mucoflocculant vulval discharge, early abortion and pyometra.

The damage due to infection is confined to females. The organism inhabits the uterus and brings about the early destruction of the embryo usually within 3 to 5 weeks after conception. The animals then return in heat and may remain infected for several months. It may lead to pyometra. As it is a true venereal disease (transmitted through sexual contact), it can effectively be prevented by the use of AI under hygienic condition.

**Transmission:**

- From infected bull during service
- Contaminated semen in case of AI.

**Clinical Signs:** The most common symptoms are infertility characterized by repeat breeding and Irregular oestrus cycle, Abortion 2-4 months of gestation. Mild endometritis, cervicitis and valvovaginitis may be produced but may go unnoticed. Discharge is very scanty unless pyometra occurs. The pus is discharged irregularly. On rectal palpation the uterus is enlarged and flaccid.

**Diagnosis:**

- Microscopic examination of the vaginal discharge

**Treatment:**

- Spontaneous recovery after a sexual rest of about 90 days.
- Inj, Metronidazole- 25-30ml i/u on alternate days for 3 days.
- Uterine douche with Lugol’s Iodine.
- Infusion of antibiotics intrauterine

**Vibriosis:** Vibriosis is a contagious disease caused by the organism *Campylobacter foetus* or *Vibrio foetus*. It is a comma shaped bacterium. In this case, the abortion takes place in 4 to 7 months. It is transmitted through the infected semen and can be checked by diluting it and the use of antibacterial reagents. The organism apparently interferes with the circulation of blood in the placenta thus causing abortion.
Transmitation:

- Natural service by an infected bull.
- AI with semen from infected bull

Symptoms:

Mild endometritis with irregular oestrus cycle, infertility due to early embryonic death leading to repeat breeding are the most consistent sign.

Diagnosis:

- Examination of vaginal mucus smear for organism
- VMAT (Vaginal mucus agglutination test). Titre of 1: 50 is regarded as positive

Treatment:

- Metronidazole -25-30 ml I/u on alternate days for 3 days.
- Inj. Antibiotics
- Uterine douche with mild antiseptic solution.
- Sexual rest

Leptospirosis:

The importance of this disease in cattle has been recognized only within the last few years. The causal organism is Leptospira pomona, which can be transmitted to man also. It causes abortions, jaundice, mastitis, haemoglobinuria and even death. Antibiotic treatment is effective in curing the disease and vaccination of animals with formalin-killed suspensions of the organism have been proved as preventive

Clinical signs:

An acute febrile disease, temp. >40 degree C. Haemoglobinuria, icterus, anorexia, abortion and low mortality rate. In less acute type: No pyrexia, abortion, stillbirth and weak calves. Abortion at any stage of gestation from 4th.month to term. More common after 6 months.
Treatment:

- Inj. of antibiotics (ref. medicine)

Listeriosis:

Primarily parasite of Central Nervous System causing encephalitis.

Clinical Signs:
Sporadic abortion with abortion occurring towards the end of gestation. There may be pyrexia before abortion in some animals. Aborted foetus often has characteristic multiple yellow or grey foci in the liver.

Treatment:

Oxytetracycline or Penicillin.