

pregnancy Problems

1- Hydropsy fetal membrane

Both the amniotic and allantoic sacs can contain excessive quantities of fetal fluid ; when this occurs it is referred to as hydramnios or hydrallantois, depending on which sac is involved. Hydrallantois is much more common than hydramnios, although the latter is always seen in association with specific fetal abnormalities such as the 'bulldog' calf in the Dexter.

Hydroallantois: or hydrops of the allantois, is due to a defective placenta (the chorio-allantois).

- The fetus is normal.
- The condition is characterized by a rapid accumulation of watery, clear fluid, usually in the last trimester.

Clinical signs :

The cow is rounded in the caudal view, and you normally can't palpate the fetus or placentomes.

Usually the condition results in a sick cow with anorexia, decreased rumen motility, dehydration and weakness. The cow may be down. The placenta is thick. If the cow survives, postpartum metritis is common. The condition usually ends in death or intervention.

- The prognosis is guarded to poor for life and fertility.
- Treatment: consists of Caesarian section. Dexamethasone can be used if the cow is not down.

Hydramnios: or hydrops amnios, is due to a defective calf, usually attributed at least partly to a defect in swallowing. The placenta is normal.

The condition is characterized by a gradual accumulation of thick fluid during the last half of gestation.

- Clinical signs :Usually you can palpate the fetus and placentomes. The cow is clinically otherwise unaffected. The pregnancy usually goes to term, and frequently a small, deformed fetus is delivered. Postpartum metritis is uncommon.
- The prognosis is good for life and fertility. No treatment is required.

2- Superfecundation:

Its occur without causing problem when offspring from more than one sire are conceived at the same estrus period. Its occur in dog and cat but may be occur also in cow. In sow the condition occur routinely.

3- Superfetation:

Its occur when an animal that is already pregnant and come to estrus, is served, and conceives a second litter. This occur in wild species such as the kangaroo and sow

4- Ectopic Pregnancy:

The condition of fetal development outside the uterus. Its common in human. In this condition urgent surgery is necessary to terminate the problem.

There are two type of ectopic pregnancy which are :

- 1- **True ectopic pregnancy** :it occur when the embryo attach in the other uterine tissue (like omintum or oviduct etc.) and continuous in the development .this condition are more common in human when the embryo development in the oviduct ,and it will led to tearing of the oviduct and cause severe bleeding ,it also may occur in the animals.
- 2- **Secondary ectopic pregnancy** :this case occur when the embryo are normally developed in the uterus and then escape outside of uterus like in peritoneal cavity or vagina with many reason like uterine torsion or uterine rupture .

5- Twin:

the animals are divided into monotocous (that animals which often bearing one fetus in each pregnancy like mare and cow) and polytocous (that animals which bearing more than one fetus in each pregnancy like goat ,pig ,cat and bitch).

In the monotocous animals the twin may combined with many complication such as abortion , premature birth and dystocia ,therefore the twin consider a problem in this animals (specially in mare).

6- Embryonic death:

Termination of pregnancy may occur at various stages :

1- Before maternal recognition of pregnancy (before 14 days of gestation in cow), in which case the length of cycle is not affected (early embryonic death).

The early embryonic death considers the main causes of repeat breeder in cattle

2- After maternal recognition of pregnancy and is associated with a delay in the length of the cycle (late embryonic death).(this time between 14 days of gestation to 45days)

3- During the fetal stage (after 45days of gestation) is called fetal death.

Causes :

1- Genetics factors

2- Infection

3- Immunological

4- Environmental

5- Chromosomal aberration

6- Nutrition

7- Endocrine imbalance

7- Abortion

Abortion: expulsion of dead conceptus or a living one incapable of life.

Premature delivery: preterm birth of immature viable fetus.

Stillbirth: dead fetus expelled at term.

Abortion in dairy cattle is commonly defined as a loss of the fetus between the age of 45 days and approximately 260 days.

Abortion is usually caused by agents affecting the fetus, fetal membrane or endometrium.

Common Causes of Abortion

1- Infectious causes which includes :

1- Bacterial infection such as brucella, campylobacter(vibriosis), leptospirosis, listeriosis

2- Protozoal (trichomoniasis)

3- Viruses(infectious bovine rhinotracheitis IBR, epizootic viral abortion EVA)

- 4- Mycoplasma
- 5- Fungal :mycoses(aspergillus)

2- Non-infectious causes

1. Chromosomal abnormalities
2. Nutritional: Toxic plants, Nitrate poisoning, Phyto-oestrogens, Iodine deficiency, Vit. A deficiency .Selenium deficiency, Lead and Cadmium poisoning
3. Stress: Handling, High body temperature, Trauma, Surgery, Vaccinations
4. Miscellaneous: Multiple pregnancy (twinning), Insemination during pregnancy, Corticosteroid therapy, Prostaglandin therapy, Allergy, Dehydration

SEQUELAE TO EMBRYONIC OR FETAL DEATH

Fetal mummification

This occurs in cases of fetal death without involution of the corpus luteum and fetal expulsion, followed by autolytic changes, absorption of the fetal fluids and involution of the placenta.

In cows the maternal caruncle involutes and hemorrhage occurs between the placenta and the endometrium, leaving a reddish-brown, gummy mass that imparts a reddish brown color to the mummified fetus.

Causes :

The etiology is varied and ranges from infectious causes such as BVD, leptospirosis, etc. to non-infectious causes such as genetic, compressed umbilical cord, etc.

Diagnosis :

Diagnosis is based on the presence of a CL, the lack of fremitus in the uterine artery and lack of fetal fluid in the uterus. The fetus feels dry and mummy-like on palpation. Oftentimes the head, ribs, etc. can be felt.

Prognosis : is good if the fetus is removed. After the fetus is removed, conception usually occurs 1-3 mo. later.



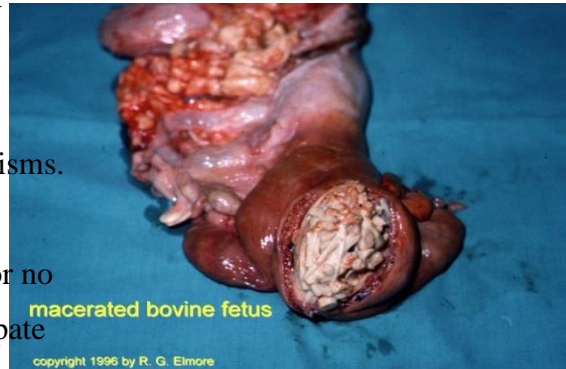
Treatment : is accomplished by administering PGF2a (with or without estrogen) to lyse the CL. Steroids are ineffective with dead fetus and non-functioning placenta. After treatment, check the vagina because sometimes the mummy may be lodged in the vagina when expelled.

Fetal Maceration

Fetal maceration results from death of the fetus followed by dilation of the cervix and incomplete abortion or dystocia, usually during the last half of gestation. This condition can be due to a variety of miscellaneous organisms.

Diagnosis

On palpation per rectum, the uterine wall is thick, little or no fluid is present in the uterus and you may be able to palpate fetal bones and pus, or bones crepitating against each other in the uterus.



Prognosis

The prognosis is poor for cows with this condition. This is not a "retained CL" problem so lysis of the CL is not helpful. Endometrial damage is present even if all fetal parts are removed.

Treatment

Treatment is very difficult. The cervix cannot usually be dilated sufficiently to remove all the fetal parts and any remaining fetal parts act as an IUD. Surgery has been performed in valuable individuals but is very difficult.

Uterine torsion

Uterine torsion usually occurs near term and is usually found at parturition because of the subsequent dystocia.

Herniation of the pregnant uterus:

Inguinal hernia:

This hernia is seen in bitch, the original hernia may be acquired or congenital.

Diaphragmatic hernia:

This rarely contain pregnant uterus.

Ventral hernia:

This occur in large animal but it seen also in cat, dog, sheep and goat with weak abdominal muscle.

Perineal hernia:

This can be seen in sheep

Rupture of the prepubic tendon:

This occur in heavy horse but may be occur in other farm species. This condition accompaind by edema just anterior to the udder. The edema is characheristically painful.

PROLAPSE OF THE VAGINA DURING PREGNANCY

Prolapse of the vagina is an important and common condition requiring careful management. It is seen chiefly in cow, ewe, and sow; less commonly in mare, doe, bitch, and queen.

Etiology Excess antepartum relaxation of pelvic tissues and increased intra-abdominal pressure.

Predisposing factors These include: breed in cattle (there is a high incidence in Hereford cows); high levels of estrogen in the diet (for example in some clovers); possible high endogenous production of estrogen; sloping environment; rumenal tympany; overfeeding with bulky food. Other factors include aging – the pelvic muscles and ligaments become less elastic with successive pregnancies.

Clinical signs Eversion of the vagina with exposure of the mucosal surface (Fig. 2.5). In the early stages the appearance of the prolapse may be intermittent. The prolapse may be partial or complete and in the latter case the cervix may also be visible. The exposed organ is vulnerable to damage and possibly infection. Small animals may cause additional damage by licking the prolapsed organ. The sow may rub her hindquarters against the bars of her farrowing crate. In all cases the obstetrician must ensure that it is the vagina, and not the rectum, that is involved – sometimes both are affected.

Treatment

I Aims To prevent further damage to the organ, replace it after appropriate cleaning, supervise birth, and be prepared for possible postpartum recurrence.

2 Considerations Severity of prolapse, species involved, proximity of parturition, extent of damage sustained.

3 Methods

- *Conservative:* if the prolapse is intermittent or slight the obstetrician or attendant may simply clean, lubricate, and replace the prolapse periodically while awaiting birth. Parturition is then carefully supervised to avoid further damage to the prolapsed organ. In the cat and dog it may help to put a protective collar round the patient's neck to prevent licking. A cow may be placed in a stall with an elevated rear end so that her hindquarters are higher than her head. The forces of gravity may assist in keeping a small prolapse in place. In other cases repeated injections of epidural anesthetic combined with xylazine have been used to prevent straining, with varying degrees of success.
- *Suturing methods/trusses:* numerous suture patterns are available including a simple mattress suture and Buhner's purse-string suture (Fig. 2.6). In each case, careful cleaning of the prolapse and administration of epidural anesthetic is required. In sheep, a plastic vaginal truss or prolapse replacer ('Moffat' replacer) is very effective and is usually tied onto the fleece on either side of the perineum (Fig. 2.7). The ewe is able

to lamb without removal of the replacer. Lambing can be delayed or the vagina severely lacerated if sutures are in place and the ewe is unsupervised. At one time heavy metal trusses and clamps were used to hold the vagina closed often with poor results. With any suture pattern the obstetrician must ensure that the patient is able to pass urine. This can be achieved by suturing only the dorsal two-thirds of the vaginal lips.

Induction of Parturition

Induction of Parturition in Cows

Indications

1. To prevent dystocia due to feto-pelvic disproportion.
2. When programming calving and pasture availability.
3. In the management of medical problems, such as hydrops allantois.
4. Abortion of small heifers.

Side effects

The most common problem associated with the induction of parturition in cows is retention of the fetal membranes.

In the cow, progesterone is necessary for the maintenance of pregnancy. As already referred to, in the first 150 days of gestation and during the last few days before parturition, the corpus luteum is the main source of progesterone. In the period between, the placenta produces sufficient progesterone to maintain pregnancy. Parturition is triggered by an increase in foetal cortisol production. This initiates a rise in placental oestrogen production and of prostaglandins (PGF₂). The corpus luteum regresses and the plasma progesterone level drops sharply. Research has focused on the use of prostaglandins, corticosteroids or a combination of the two to induce parturition.

Procedures:

1. Short-acting Corticosteroids

- Dexamethasone (**20mg**) as a single intramuscular injection.
- 80% - 90% effective when administered to cows within 2 weeks of full term.
- The interval from injection to parturition is about 48 hours.
- The incidence of retention of the fetal membranes is estimated to be about 75%.

2. Long-acting Corticosteroids

- Dexamethasone trimethylacetate or Betamethasone suspension (**20 mg**) as a single I.M. dose about 30 days before term.
- Parturition occurs about 15±8 days after injection.
- This method associated with a lower incidence (**9 to 22%**) of retained placenta.

- There is a high incidence of calf mortality (**17 to 45%**) that is thought to be associated with premature placental separation and/or uterine inertia, and the colostrum immunoglobulin concentration is reduced.

3. Prostaglandins

- PGF2 alpha (**Lutalyse**) (**25 mg**) used as a single I.M. injection.
- Calving occurs 24 to 72 hours later in 90-100% of cows treated.
- Calf viability is good if given less than 2 weeks prior to term.
- The incidence of retained fetal membrane is similar to the short acting corticosteroids.
- Some studies have shown a higher incidence of dystocias with prostaglandin than with the corticosteroids.

4. Corticosteroid-Prostaglandin Combination

- Calving occurs sooner than for either drug alone (**34.6+ 1.4 hours**).
- The incidence of retained fetal membranes is equally as high as when each drug is used alone.
- 25 mg **PGF2** alpha I.M. and 25 mg. dexamethasone I.M.

5. Short-acting Corticosteroids and Estrogens Combinations.

- 20-25 mg estradiol I.M. and 25 mg dexamethasone I.M. tends to shorten the average interval to calving.
- This procedure decreased the incidence of retained fetal membranes.
- Estrogens produces residues in milk which limits the use of this method in dairy cattle.

Induction of Parturition in the Mare

Indications

- 1. Mares with a history of premature placental separation.
- 2. Delayed parturition due to uterine atony.
- 3. Prevention of injury to the mare at foaling.
- 4. Possibility rupture of the prepubic tendon.
- 5. Possibility death of the mare.
- 6. Prolonged gestation

Methods

Glucocorticoids are not as effective as they are in other species. In addition, complications, like weak foals, prolonged parturition, dystocia and poor milk production, have been reported.

- 1- Oxytocin is effective, quite reliable and fast acting. Parturition is usually completed within 90 minutes. Oxytocin is however the drug of choice.

Although one single dose of 60-100 IU intramuscularly is very effective, this dose is too high as it causes considerable distress to the mare and could be dangerous.

Low doses of oxytocin (Oxyticine-SR; 2.5-10 IU) given intravenously were successful in triggering parturition in mares.

- 2- Prostaglandin F₂ have been used. Natural PGF₂ seem to have limited success in horses and side effects, such as abdominal discomfort, sweating and nervousness, may occur.

The synthetic prostaglandin, luprostirol (ProsolvlinR), is very effective and has virtually no side effects. The dose to be used is 7.5 mg (1 ml) intramuscularly.

- 3- Combinations of luprostirol (ProsolvlinR;7.5 mg) and oxytocin (Intertocine – SR; 10-20 IU) have been used with very good results.

Complications:

1. Delivery of premature foals
2. Decreased passive transfer of immunoglobulins
3. Myometrial spasm
4. Premature placental separation
5. Dystocias
6. Retention of the fetal membranes

Induction of Parturition in the Ewe

Management of ewes with pregnancy toxemia.

Prostaglandin F₂ cannot be used in sheep for this indication because the placenta produces progesterone, which blocks its action.

However, both oestrogens and corticosteroids can be used successfully.

- 1- Injection of 16 mg dexamethasone as a single I.M. injection within 5 days of term. result in normal parturition in 2 to 3 days.

2- Two I.M. injections of 1-2 mg of estradiol benzoate 5 to 6 days before term or with a single injection of 15 mg estradiol benzoate 5 days before term.

Some researchers have reported higher rates of dystocia and perinatal mortality after oestrogen treatment.

Induction of Parturition in Goats

- Prostaglandin (**250 µg im of luteolase**) at 144 days of gestation results in delivery between 27-35 hours after injection.
- 20 mg dexamethasone produces delivery in 1-2 days.
- Estradiol benzoate (15–25 mg IM) delivery in 1-2 days.

Parturition

It is essential for the veterinarian to be perfectly familiar with the normal course of parturition in domestic species in order to be able to differentiate between physiological and pathological birth.

Parturition is the process of delivery of the fully grown fetus on the completion of the normal pregnancy period.

Initiation of parturition

Parturition is one of the most fascinating of biological Processes .**The uterine musculature is the key component of labour, and the essential physiological change between gestation and birth is liberation of the contractile potential of the myometrium;** the factors involved in this transformation are neural, humoral and mechanical.

The humoral factors are most important is the reversal of those mechanisms which are necessary for the maintenance of pregnancy, in particular the removal of the progesterone block, which ensures that, during this phase of the animal's reproductive life, the myometrium is largely quiescent.

Parturition occurs as result of activation of the fetal hypothalamus–pituitary–adrenal axis.

There is still uncertainty about the mechanisms responsible for the activation of the fetal hypothalamus.

A number of theories have been proposed. These are:

- maturation of the fetal hypothalamus which might result in the development of critical synapses in the para ventricular nucleus, allowing an increase in fetal neuroendocrine function.
- ability of the hypothalamus to respond to the effects of placental hormones
- fetal stressors such as hypoxia, hyper-capnia, changes in blood pressure and blood glucose

During the last 20–25days of gestation, there is a dramatic rise in fetal cortisol concentrations, which reach a peak 2–3days before birth, thereafter declining 7–10 days postpartum. The source of the increase in fetal cortisol is the fetal adrenal, which is due to both an increase in the size of the organ in relation to total body weight, and an increase in its sensitivity to adrenocorticotrophic hormone (ACTH) , The raise an increase in corticotrophin-releasing hormone (CRH) in the fetal hypothalamus during the last10 days of gestation.

The rise in fetal cortisol stimulates the conversion of placental-derived progesterone to oestrogen by activating the placental enzyme 17α hydroxylase; this hydroxylates progesterone via androstenedione to oestrogen .

The consequences of the rise in oestrogens in the peripheral circulation are three fold :

Firstly: oestrogens have a direct effect upon the myometrium, increasing its responsiveness to oxytocin.

Secondly: they produce softening of the cervix by altering the structure of collagen fibers.

Thirdly : they act upon the cotyledon–caruncle complex to stimulate the production and release of prostaglandin $F2\alpha$ (PGF 2α). The latter change is induced by the activation of the enzyme phospholipaseA2 stimulated by the decline in progesterone and rise in oestrogen. This enzyme stimulates the release of arachidonic acid from phospholipids, so that under the influence of the enzyme prostaglandin synthetase, PGF 2α is formed.

Prostaglandins play a key role in initiating parturition; because of their molecular structure they are soluble in fat and water so that they readily pass from cell to cell via cell membranes or between cells in the extracellular fluid.

Prostaglandins have a wide range of actions which are :

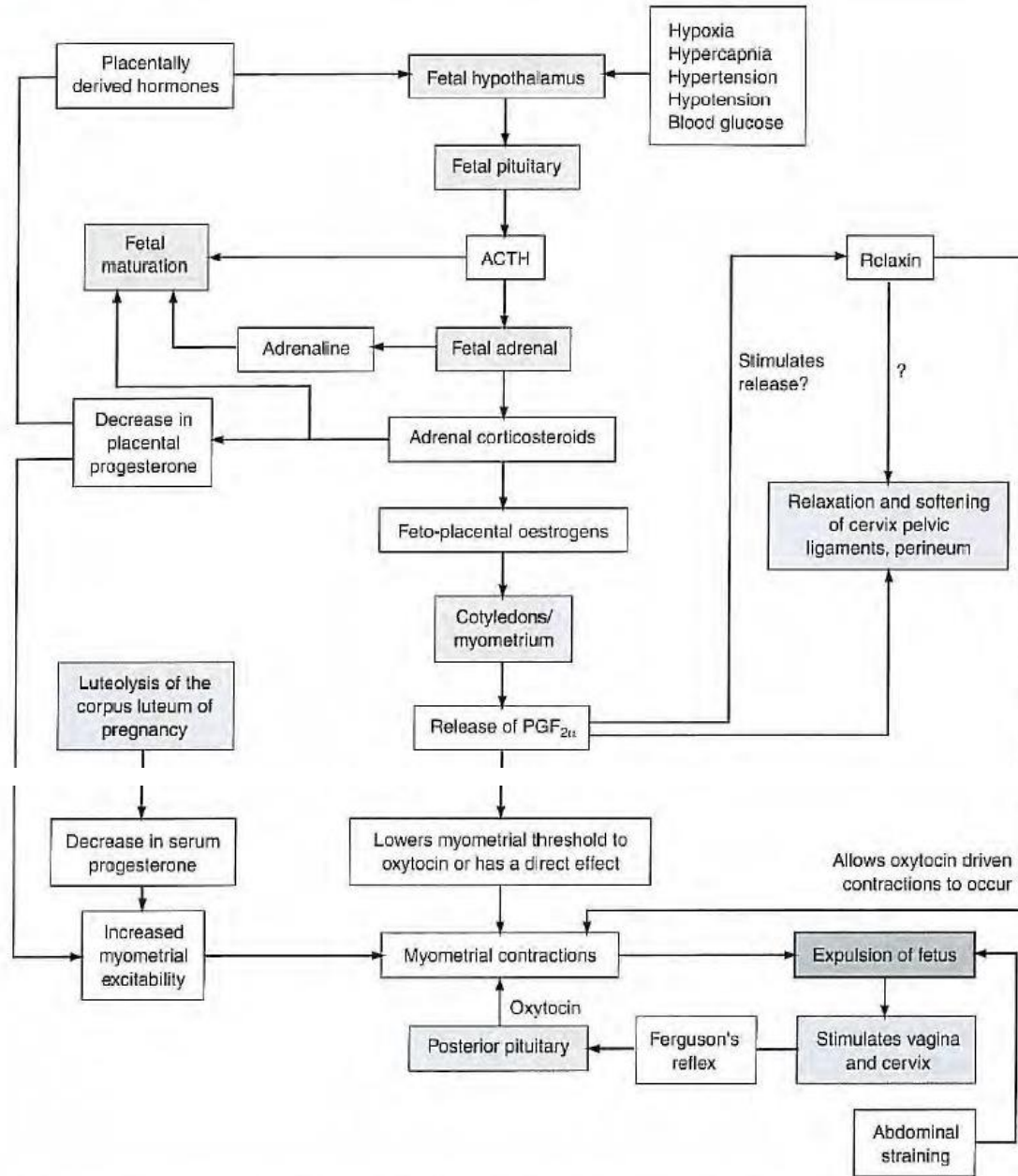
- 1- they cause smooth muscle contraction.
- 2- Luteolysis (regression of CL in ovary).
- 3- softening of cervical collagen .
- 4- Stimulating smooth muscle cells to develop special areas of contact called gap junctions, thereby allowing the passage of electrical pulses and ensuring coordinated contractions.

PGF 2α is considered to be the intrinsic stimulating factor of smooth muscle cells, and thus its release is important in initiating myometrial contractions.

The effect of these contractions is to force the fetal lamb towards the cervix and vagina where it will stimulate sensory receptors and initiate Ferguson's reflex, with the release of large amounts of oxytocin from the posterior pituitary.

Oxytocin will stimulate further myometrial contractions and the release of PGF 2α from the myometrium. Hence both these hormones, together with uterine contraction, seem to work as a positive feedback system of increasing magnitude, thus stimulating further uterine contractions and consequent expulsion of the fetus.

Other important changes which are brought about by the endocrine events of parturition have been observed. For instance, maturation of the fetal lamb's lungs, especially the production of alveolar surfactant, is stimulated by cortisol, as are many other changes in fetal function and structure that enable the lamb to survive after birth.



Fetal Hypothalamus (CRH) ⇌ fetal pituitary gland (ACTH) ⇌ fetal adrenal cortex (cortisol) ⇌ placenta (estrogen) ⇌ uterus (prostaglandin) ⇌ maternal pituitary gland (oxytocin). |