

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, luprostitol (ProsolvinR), is very effective and has virtually no side effects. The dose to be used is 7.5 mg (1 ml) intramuscularly.

- 3- Combinations of luprostitol (ProsolvinR;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.