



Pre-term induction of parturition

Pre-term induction of parturition/calving

Indications:

- ❖ Pasture availability
- ❖ Availability of skilled labour
- ❖ Reduced body weight and size - fetomaternal disproportion
- ❖ **Pathological condition** - termination – alleviation of condition of dam



Period of induction

- Induction should be carried out after 260 to 265 days to a apparently healthy cow.
- In pathogenic condition, can be done at any stage
- *Induction before 95% of the breed's normal gestation may lead to –*
 - Birth of a small, weak calf
 - Poor chances of survival

Protocol of induction

- **Administration of corticosteroid –**
- Short, medium and long acting corticosteroids can be administered.
- The effectiveness of the corticosteroid is believed to be dependent on the
Permeability of the ruminant placenta to the molecule.

- | S no. | Type of corticosteroid | Latent period (in days) |
|-------|------------------------|-------------------------|
| 1 | Long acting | 11 - 18 |
| 2 | Medium acting | 5 - 11 |
| 3 | Short acting | 1 - 6 |

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Short acting corticosteroid

- ❖ Less effective
- ❖ RFM remains a consistent feature
- ❖ **Calf viability is more**

Long acting corticosteroid

- ❖ High perinatal mortality rate.

Corticosteroids are also immunosuppressive – combined with Broad spectrum antibiotics



Administration of Prostaglandins

- $\text{PGF}_{2\alpha}$ and the analogues have been successfully used from about 275 days of gestation with a latent period of 2 to 3 days.
- **Good results** have been obtained by using a combination of corticosteroid and prostaglandin.

Protocol 1 (250-260 days of gestation)

Long-acting corticosteroid



Absence of calving for 8 days

short-acting corticosteroid or $\text{PGF}_{2\alpha}$

Protocol 2 (after 270 days of gestation)

Medium-acting corticosteroid



Either a short-acting corticosteroid or $\text{PGF}_{2\alpha}$

After 275 days of gestation $\text{PGF}_{2\alpha}$ or short- or medium-acting corticosteroids are effective on their own

BUFFALOES

Protocol A

(Gestation length less than 300)

Dexamethasone 20 mg + PGF_{2α}
25 mg, i/m

Protocol B

(Gestation length more than 300)

Dexamethasone 20 mg , i/m

Protocol C

(Gestation length 290-295)

Estrumate 750μg +
Dexamethasone 40mg. IM



Protocol 3 (Clinical reports- pathological conditions in cows and buffaloes)

Intramuscular administration of following therapeutic agents:

- Synthetic prostaglandin (PGF₂α) i.e. Cloprostenol Na @ 500 ug.
- Valethamate bromide @ 48 mg.
- Dexamethasone @40 mg.
- Estradiol valerate @ 30mg.

Disadvantages of preterm induction of calving:

- It is not always effective.
- The birth weight of the calf is lower than it would have been at term
- There is also a high incidence of retained fetal membranes, up to 53% when 'short-acting' preparations are used

contin.....

➤ inductions close to term pregnancy may still result in a *high incidence of placental retention*

➤ Milk yield is initially affected, with a delay in reaching peak lactation, very little influence on the overall yield.

➤ Subsequent fertility is fairly normal

➤ However Cows having RFM may have *high*

1. *calving to conception interval*

2. *number of services per conception*

➤ There is a reduction in the *quality and quantity* of colostral immunoglobulins (mostly after use of slow-release corticosteroid preparations).

➤ However calves passive immunity remains unaffected

Pre-term induction of foaling

- Availability of skilled labours
- Pathological condition of mare.

Preparation before induction

- Examine degree of relaxation of SC ligament and cervix
- Ionic composition of mammary secretion



Induction with oxytocin

Based on

- Direct stimulation on myometrium
- Indirect stimulation of uteroplacental prostaglandin release.

Protocol

- ❖ Ripened cervix with $\frac{1}{2}$ finger dilation
- ❖ I/M administration of 120 IU oxytocin – 360 to 600 kg mare.
- ❖ Foaling within 15 to 60 minutes



Induction with Corticosteroids

- Dexamethasone administration
- Preferable for **ponies** and **large saddle type mares**

Protocol

- ✓ 100 mg/day for 4 days
- ✓ Foaling after 6-7 days from start of treatment



Induction with prostaglandin

PGF_{2α}

1.5 to 2.5 mg every 12
hours

Fluprostenol

Period

322 and 367 days

Dose rate

250 µg to ponies

1000 µg to throughbred



Pre- term induction of farrowing

- ❖ On average 5% to 7% of all piglets are stillborn
- ❖ Interval between the birth of the first and last piglets is associated with the stillbirth rate.
- ❖ *Prolonged farrowing may results in an increase, probably 80% of the stillbirths*
- ❖ The stillbirth rate can be reduced by intensive care and attention during farrowing.
- ❖ Major constrain is the difficulty in prediction of time of farrowing.
- ❖ **Solution – induction of farrowing of groups of sows at predetermined times.**

Pre- term induction of farrowing.

Group farrowing

- ✓ facilitates multiple suckling and allows crossfostering to take place.
(spl. In cases of MMA)
- ✓ Groups of sows and litters can be managed on an '*all in, all out*' principle, therefore more hygienic management can be practiced
- ✓ Group farrowing facilitates group weaning.

It might increase the reproductive efficiency by reducing the farrowing interval by a few days.

Protocols

- Intramuscular administration of natural $\text{PGF}_{2\alpha}$ or a synthetic analogue i.e. Cloprostenol, **on days 111 to 113 of gestation**
- Farrowing will occur on average 28 hours later.
- Thus, if procedure followed at 8 or 10 AM - majority of sows will farrow during normal working hours.
- Combination therapy with administration of 20 IU of oxytocin 24 hours post PG administration was tried with moderate effect
- **In recent times**
- Use of **vulvar injections** of a split-dose (50% of the label dose at a 6-hour interval) was recommended to obtain a higher proportion of responding SOWS

Pre- term induction of Lambing

The indications for pre-term induction are limited because dystocia due to fetomaternal disproportion is not as common as in cows.

However, lambing at day time with available skilled labor is important indication

Limitation

Shortening of gestation length by more than 7 to 10 days may lead to increased lamb mortality.

Protocol – 1. Administration of Corticosteroid –

corticosteroids such as dexamethasone, flumethasone, and betamethasone are given by a single I/M injection within 5 days of term, normal parturition occurs in 2 to 3 days.

Protocol – 2. Administration of 3 β -hydroxysteroid dehydrogenase inhibitor.

Epostone administration via oral, I/V, or I/M route between days 136 and 142, birth of viable lambs occurred between 33 to 36 hours after application.

Protocol – 3. Administration of progesteron receptor antagonist.

I/M injection of RU 486, both on day 144 and 145 days of pregnancy, significantly advanced the birth of viable lambs.

Very recently it was demonstrated that

- ❖ Two injections (on day 140 and 141) of aglepristone (5 or 10 mg/kg body weight)
- ❖ Precisely controlled the lambing time without any adverse side effects in either mothers or lambs.

Pre- term induction of Kidding

- ❖ Preterm induction of parturition in goats can be achieved by administration of
- ❖ Luteolytic dose of natural prostaglandin F_{2α}
- ❖ Synthetic analogues Cloprostenol
- ❖ Unlike cattle Dystocia and retention of the fetal membranes did not occur

Summary

- Preterm induction of parturition in farm animal often required and can be practiced with precautions based on indications.
- More research in this area with various protocols may facilitate better farm management with less chances of dystocia and perinatal deaths.

Thank you

