

Popular Article

Retention of fetal membranes and new therapeutic approaches in buffalo

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Abstract

To literature and reviewed all the major aspects of retained placenta and their impact on farmer economy and identify its causes, incidence, clinical signs, diagnosis, therapeutic approach (pharmacological interventions) and their prevention and control. Retention of placenta (ROP) is one of the most commonly occurring important economic reproductive pathologies following parturition or whenever the third stage of labor is prolonged beyond its normal duration (6-12hrs) in buffaloes.

Incidence

Higher in dairy buffaloes compared to swamp buffaloes. The incidence varies between 4 to 14% in murrah buffaloes.

Dilatation or relaxation of caruncular crypts play major role in separation of villi of fetal cotyledons and the crypts of maternal caruncles. Defect in maternal caruncle and fetal placental cotyledons (collagen breakdown) or failure of retro-placental myometrium contractions leads to pathophysiology of ROP. ROP greatly alter milk production and ensures infertility result into dejecting consequential impact in farmer economy.

Therapeutic management

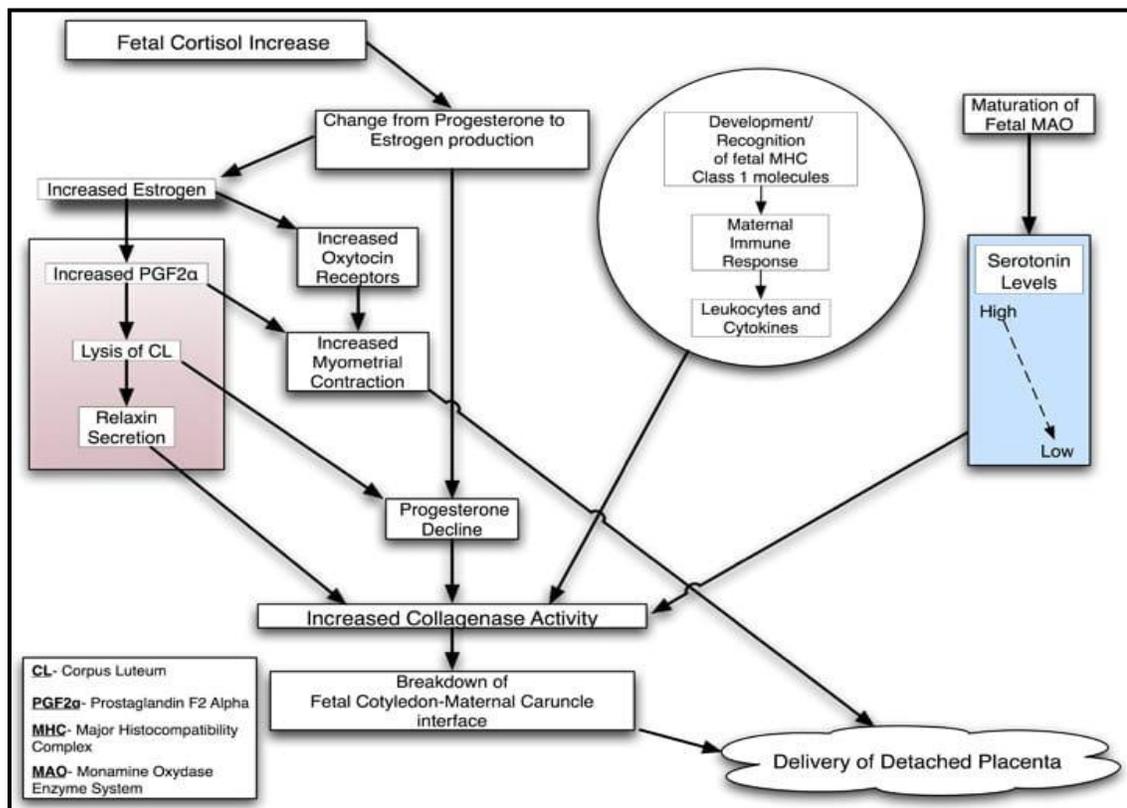
Uterine stimulants (Oxytocin and Methyl ergometrine) should be the treatment of pharmacological interventions in certain field conditions by practitioners.

Introduction

India is the origin of centre of diversity of the world's best dairy buffalo breeds. Buffaloes are high milk yielder animals (Khan *et al.*, 2004) and are considered as "Black Diamond" contributing more than half of the milk production in India. Retention of placenta (ROP) is one of the most commonly occurring crucial calving related reproductive pathologies or common maladies during puerperium in buffaloes. Retention of placenta is the abnormal condition in which non separation of the placenta/fetal membranes from the endometrium of uterus in the normal duration of the third stage (6-12 hours or may extend as far as 24 hrs) of labor/parturition or failure of third stage of labor (Pradeep kumar, 2005). In buffalo, the maternal caruncles fuses with the foetal cotyledons like a "hand-in-glove" to produce placentome, a functional unit of the placenta. The retention of placenta results from a lack of separation of villi of fetal cotyledons and the crypts of maternal caruncles is called primary retention of placenta.

The retention of placenta which results from mechanical difficulty in expelling already detached foetal membrane (eg. Uterine atony) is called secondary retention of placenta. The retained placenta usually causes the buffalo to delay the next pregnancy for 2-6 months, late calving date in following year and may results in an open buffalo next year. The occurrence of ROP has multifactorial causes including physiological, nutritional and animal related factors. ROP occurs either due to uterine inertia, abortion, still birth, dystocia, hormonal imbalance, induced delivery (PGF2 α , dexamethasone), vitamin E and selenium deficiency, estrogen progesterone ratio imbalance. The infection of reproductive tract further leads to infertility and poor reproductive efficacy and predisposes to pyometra, puerperal metritis, increased frequencies of endometritis, delayed uterine involution, mastitis and ketosis in affected animals. In general it was proven that the retention of placenta is a crucial predisposing factor for development of post-partum uterus infection in dairy cows. Hence expulsion of placenta within the stipulated time period is important for subsequent reproductive efficiency as it hastens in timely involution and resumption of postpartum cyclicity (Drillich *et al.*, 2006).

Pathophysiology:



Incidence of retained placenta: ROP is considered as one of the major problem with higher incidence in premature birth and abortions by ultimately affecting the reproductive efficiency in buffaloes. Retention of placenta incidence is high in buffaloes 1.2 to 33.8% when compared to cattle 2.3 to 11%. High in diary buffaloes compared to swamp buffaloes. The incidence varies between 4 to 14% in murrh buffaloes (Gupta et al., 1999). ROP incidence of 13 to 26% has been reported in India. The incidence in buffaloes varied between 2.89-12.23% and could increase with parity, reached a maximum at the fifty parity (30%), associated with malnutrition. A higher incidence (44.7%) affected the heifers and their calving while it was 10-13% after second and third calving, 10-12% after fourth and fifth ones (Majeed AF et al., 2009).

Clinical signs:

Non infectious

- Hanging of the placenta
- No foetid smell from the placenta
- Normal appetite
- Normal pulse and temperature
- Normal milk yield
- Normal colour of placenta, moist & glistening

Infectious

- Anorexia
- High fever
- Reduced milk yield
- Straining
- Septicemia
- Foetid smell from placenta



Fig 1: Retained placenta hanging upto the level of the hock joint (>24 hours post partum).

Diagnosis:

Firstly, on the basis of history given by the owner of recent parturition & consequently no fetal membrane came out

- **Imaging technique:** Trans-rectal imaging technique may be helpful in confirming retained placenta in cases where the cervix may be closed making digital vaginal examination impossible. In ultrasonography hyper-echoic placenta in fluid in the uterine lumen attached to hypo-echoic caruncles.
- **Other diagnostic procedures:** Tran-srectal palpation and digital rectal examination.

Treatment:

The basic goals of any therapeutic plan should be to return the animal reproductive usefulness as soon as possible and to prevent complications that can lead to economic losses.

Oxytocin: - Buffalo 75-100 IU, IM (Immediately after calving). Use of oxytocin is of questionable after 24 hours of calving because by this time, the response of oxytocin becomes poor. Unfortunately in cattle practice, generally veterinarians do not consult until after 24 hours of retention of placenta because until then the farmer has hoped for a spontaneous expulsion. When retained placenta is associated with uterine atony caused by hypocalcaemia then give Oxytocin & calcium borogluconate.



Fig.2 Oxytocin (Pitocin)



Fig.3 Uterotone (Oral)



Fig.4 Moxiwell-IU

Intrauterine treatment:

After manual removal of placenta, 2-4 boluses of suitable intrauterine preparations should be kept in the uterine horns. Many intrauterine preparations are available in the market. e.g.- Furex bolus, C-flox-TZ bolus, Steclin bolus, Replanta powder, Povidone iodine, Cleanex bolus etc.

Indigenous preparations:

Many indigenous preparations are available in the market for removal of retained placenta.eg. - Uterotone liquid, Uterifit, Involon and Urevive etc.

Dose: - Buffalo: 100 ml twice a day for 5 days.

Collagenase therapy:

A new approach for the treatment of retention of placenta is the injection of collagenase into the umbilical arteries. This technique is safe & no side effect, Effective is 85% within 36 hr. Bacterial collagenase from *Clostridium histolyticum* is used because it can degrade several types of collagens.

Other medications:

Grasp the hanging placenta in the right hand and twist like a rope so that the placenta can be more easily managed. Introduce Echolic/Uterine stimulant Methyl-ergometrine maleate. Large animal: 1-2 mg (5-10 ml). PGF 2α and its analogues (cloprostenol) have direct effect on the placentomes in buffalo – 0.5 mg, IM (2ml).



Fig .5 Cloprostenol injection IP



Fig.6 Methyl Ergometrine

Manual removal of placenta:

Give epidural anesthesia (5-7 ml 2% lignocaine). Insert the lubricated left hand into the uterus. The hand should be inside the uterus but outside the placenta i.e. between the uterus and placenta. Grasp the individual cotyledon and its caruncle between the thumb and fingers and the two structures (cotyledon and caruncle) should be gently separated by rolling pushing and squeezing motion. This may be aided by traction with the other hand (right hand). Remove or separate the cotyledons from the caruncles first which are near to the cervical area, then from non-gravid horn and lastly from the gravid horn. During this operation, tension should be maintained on the hanging placenta. Sometimes, especially in exotic and large breeds of cow or earlier removal of placenta, the ovarian end or cranial end of gravid horn may be out of reach the hand but traction on the placenta sometimes pulls the apex of the horn nearer and removal of cotyledons from this portion becomes possible. It is highly desirable to remove all the fetal membranes and not leave any remnant in the uterus as far as possible because they act as foci of infection.

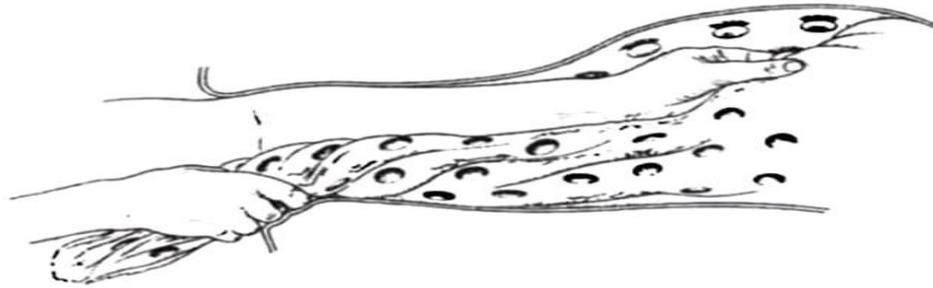


Fig .7 Manual removal of the placenta in a buffalo

After care:

Flushing and siphoning the uterus once or twice daily for a few days using warm, sterile physiological saline should be used in 2-4 litre flushes (until the recovered fluid is clear). NSAIDS use in case of fever. Systemic antibiotics in case of toxic metritis. E.g. ceftiofur 1-2.2mg/kg BW. For 5 days. COX inhibitors like flunixin meglumine 1.1-2.2 mg/kg BW can be given to treat endotoxaemia.

Conclusion:

Postpartum reproductive pathologies & crucial calving related maladies is very common in dairy buffaloes thereby making retained placenta prevention and management extremely important, as it greatly affect reproductive efficiency of animal, indirectly affecting farmer's economy and increases the expenditure cost of animal. The incidence of ROP is higher in debilitated animals (Nutritional and infectious interference) and in aborted dam. Practically no retained placentas occur after abortions prior to 120 days and the incidence dropped to 1.5 % of calving between 300 and 310 days of gestation. Author recommends the practitioners should sequentially perform and observing the diagnostic procedure for better and reliable results thus, improving the prognosis and further treatment.

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