



## Treatment of Retained Fetal Membranes in Farm Animals: A Review

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### Abstract

Retained Fetal Membranes (RFMs) represent the failure of the entire or partial placenta to be expelled within physiologic time limits. Although variation exists among species regarding the duration of time that must pass before a placenta is considered retained, the condition is one of the most common complications occurring in animals after parturition. A variety of risk factors, including early or induced parturition, dystocia, hormonal imbalances, and immunosuppression, can interrupt normal processes and result in retention of fetal membranes. Current research does not support the efficacy of many commonly practiced treatments for RFM. Systemic administration of antibiotics can be beneficial for treating metritis after RFM, but antibiotic administration has not been shown to significantly improve future reproduction in cows with Retained Fetal Membranes (RFM). Collagenase injected into the umbilical arteries of retained placentas specifically targets the lack of place to me proteolysis and might enhance placental release. However, such therapy is costly and its benefits in terms of improving subsequent reproductive function have not been evaluated.

**Keywords:** Farm animals; Retained fetal membranes; Treatment; Microcotyledons; Polymyxin

### Introduction

Retention of fetal membranes is associated most commonly with abortion, dystocia and multiple births. The most commonly used definition is the presence of fetal membranes 12 hours or more following parturition but retention for more than 6 hours-8 hours is the time limit set, particularly in older cows. Fetal membranes considered pathologically retained in the cow if they are not expelled by 8 hours to 12 hours after calving [1]. The incidence of retained fetal membranes in dairy cattle is 3% to 12% after normal parturition. Dairy cows are more commonly affected than beef cows. The incidence of retained fetal membranes may exceed 50% after abnormal parturition or abortion and in brucellosis infected herds [2].

The principal causes of retained placenta in cattle is a disturbance in the loosening process between the fetal cotyledons and maternal

caruncles [3]. The processes that lead to successful loosening and separation of the placenta occur during the months preceding parturition. Many infectious and noninfectious factors are believed to disrupt the separation and expulsion processes. An endocrine causal relationship does not appear to exist [4].

Clinical signs of retained fetal membranes in the doe and ewe are similar to those in the cow. The placenta of the ewe and doe is considered retained if it is not expelled within 24 hours after parturition [5]. The incidence of retained placentas in does is 6.4%. Placental retention for longer than 24 hours may cause metritis in ewes and does. Inadequate dietary selenium and inadequate nutrition and exercise during gestation have been seen as factors predisposing does to retained placentas [6].

The incidence of retained fetal membranes is 2% to 10% in the mare, with a higher incidence in draft horses than in lighter horse breeds [7]. The cause of retained fetal membranes remains unclear, but it is believed that allantochorionic microcotyledons near the tip of the non gravid uterine horn have failed to separate as a result of an endocrine unbalance, a disturbance in normal myometrial contractions, or any swelling at the site of microcotyledons [8-10]. Diagnosis of retained fetal membranes in the mare is straight forward when it is based on the observation of membranes hanging from the vulva beyond 3 hours after foaling Camelid placentas resemble equine placentas (diffuse, microcotyledonary, epitheliochorial), with the exception that the left horn is almost always the pregnant horn. RFMs in camelids are most commonly seen as sequelae to dystocia or other disorders of parturition and treatment is similar to that described for the mare [11].

Therefore, the objective of this paper is;

- To review the treatment of retained fetal membranes in farm animals.

### Literature Review

#### Treatment of retained fetal membranes in farm animals

**Cattle:** Manual removal of the placenta is indicated only when gentle traction is sufficient to withdraw the membranes in a short time. Attempts at manual removal are contraindicated if the patient shows clinical signs of septicemia. Trauma caused by manual removal inhibits phagocytosis by uterine neutrophils and predisposes to severe sequelae, including endometritis, septic metritis, peritonitis and a delay to first ovulation [12].

Administration of a single dose of oxytocin does not reduce the prevalence of RFMs in cows that calve spontaneously or in cows that require assistance at delivery. Cows with RFMs have an elevated plasma concentration of estrogen during the period of retention; therefore administration of additional estrogen for treatment of Retained Fetal Membranes (RFMs) may be of questionable value [13].

Treatment with fenprostalene (a prostaglandin) resulted in a shorter period of retention in treated cows, reduced the number of treatments subsequently required for metritis, and slightly reduced the intervals to first service and conception. However, other researchers found that fenprostalene produced no changes in myometrial activity between days 1 and 4 after calving and concluded that uterotonic agents are unlikely to hasten placental expulsion, because uterine effort is already

increased in animals that have RFMs [14]. An imbalance between synthesis of PGF<sub>2</sub> $\alpha$  and Prostaglandin I<sub>2</sub> (PGI<sub>2</sub>) between 30 minutes and 60 minutes after parturition has been demonstrated in cows affected by retained fetal membranes.

Intrauterine tetracycline may reduce fertility or the reproductive performance of treated cows may be as good as that of untreated herd mates. Intrauterine treatment with 4 g to 6 g of oxytetracycline per day until the placenta is expelled may reduce the prevalence of metritis associated with RFMs, but pyometra may develop in treated cows. The placenta is released only after necrosis of the caruncles, which may be delayed by the presence of intrauterine antibiotics. Systemic antibiotics are indicated in cases of RFMs in which the cow has a fever, is off feed, or has a drop in milk production [15].

Collagenase is an alternative approach to the treatment of RFMs. Injection of collagenase into the umbilical arteries of the retained membranes. This treatment is aimed directly at the lack of cotyledonary proteolysis and although effective, it is expensive and often not economically justifiable. Intrauterine infusion of collagenase is not effective.

**Ewe and doe:** Manual separation of cotyledons from caruncles is impossible in ewes and does; therefore manipulative attempts to remove the placenta are limited to gentle traction on exposed membranes at daily intervals. Treatments with broad spectrum systemic antibiotics, oxytocin (10 IU to 20 IU) at 12 hour intervals until the placenta is expelled and anti-inflammatory drugs have been suggested. Prophylaxis against tetanus is indicated. The placenta should be left in situ to rot away on its own. If the ewe/doe is pyrexia the uterus can be flushed with warm normal saline and the ewe can be given 20 IU oxytocin.

**Mares and camels:** Manual removal of retained membranes carries the risk of uterine damage or prolapse therefore it should be gentle tugging to remove already loosens membranes. Oxytocin, 20 IU, IM, intrauterine oxytetracycline 1000 mg/kg, intrauterine should be administered prophylactically along with 2.5 mg/kg-5 mg/kg, IM postpartum.

Oxytocin induces myometrial contractions, which may aid placental expulsion. Oxytocin may be administered by IV injection (5 IU to 20 IU every 30 minutes to 60 minutes) or IM injection (10 IU to 20 IU every 30 minutes to 60 minutes), or it may be infused slowly.

If the allantochorion is intact, the allantochorionic cavity maybe filled to distention with 3 gallons to 4 gallons of warm saline or water through the cervical star. The opening in the placenta is held closed manually until the mare exerts abdominal pressure. Oxytocin may be used in conjunction with this treatment. If the allantochorion is not intact, uterine lavage with an isotonic saline solution will clear debris, will trigger myometrial contractions, and may help free the retained fragment of the fetal membrane. The isotonic saline solution may be infused into the uterus through an equine nasogastric tube (dedicated to reproductive use) manually held in place. Approximately 5 L may be placed in the uterus of a full grown, postpartum mare at one time, but care should be taken to observe the mare for signs of discomfort and to gauge the amount of fluid felt within the uterus. Uterine lavage should be performed at least once daily until 12 hours to 24 hours after the RFM remnants are retrieved.

Concurrent therapy directed at controlling or minimizing common sequelae to retained placenta is often indicated. Bacterial infections are commonly associated with prolonged (>6 hours to 8 hours)

retention of the fetal membranes. Broad spectrum antibiotics known to be effective against commonly isolated organisms are indicated. Laminitis may be a sequel to metritis and is commonly associated with RFMs. Treatment with administration of anti-inflammatory drugs such as phenylbutazone or flunixin meglumine is indicated to reduce the likelihood and severity of laminitis. Polymyxin B may also be indicated in cases in which preliminary signs of laminitis are noted because of its anti-inflammatory and anti endotoxic effects. Prophylaxis with tetanus antitoxin in unvaccinated animals or tetanus toxoid in previously vaccinated animals is indicated.

## Discussion

### Prevention and Control

The control of retained placenta needs to focus on the control of causative factors like abortions, premature calving, calving difficulties, and vitamin and mineral deficiencies. Milk fever and even sub clinical calcium deficiency can be associated with an increased risk of RFM with older cows more at risk of lower blood calcium. Then it needs to be controlled. Good control of feeding and condition during the dry period and avoiding cows becoming over fat will also reduce the incidence of retained placenta. The herds with a history of selenium deficiency had a high incidence of RFM, and according to their suggestion supplementation of vitamin E and selenium can help to reduce placental retention.

## Conclusion

Many common therapies for Retained Fetal Membranes (RFMs) have not been shown to be effective, and some could actually have a negative impact on future reproduction. Manual removal, local antibiotics, and prostaglandins are used treatments, although current evidence does not support their use. When systemic signs are observed, systemic antimicrobials appears to be beneficial in reducing disease and aiding in the return to normal reproductive function. Collagenase might prove to be valuable in achieving faster release, although cost prohibitive in many cases. New therapies should be aimed at correcting specific causes of retained fetal membranes. The limited availability of effective treatment options emphasizes the importance of prevention. Current recommendations for prevention of retained fetal membranes in farm animals include animal comfort, reducing stress around parturition and careful nutritional management, particularly during the transition period. Supplementing vitamin E and selenium may be an effective preventive measure.

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