TRADITION AND MODERNITY IN VETERINARY MEDICINE, 2025, vol. 10, No 1(18): 119–123

RETAINED FETAL MEMBRANES IN A COW – CASE REPORT

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(Submitted: 27 September 2025; Accepted: 24 December 2024; Published: 25 June 2025)

ABSTRACT

Retained placenta in cows is defined as failure to expel all or part of fetal membranes within 6–24 hours after parturition. Risk factors contributing to this include abortion, dystocia, twin delivery, stillbirth, hypocalcemia, premature delivery, placentitis and others. Retained placenta is characterized by various levels of degenerating, discolored and foul-smelling membranes protruding from the vulva. Can be conducted through manual removal or medications. The clinical case concerns a cow in the village of Tsalapitsa within the discipline of Mobile Clinic in obstetrics and gynecology. In the morning, we diagnosed retained placenta in a cow which had given birth unassisted during the night. Vaginal and rectal examinations were performed and treatment was conducted by intrauterine application of antibiotic pessaries. The cow expelled the retained placenta within three hours following the administration of the medication.

Key words: cow, retained placenta, treatment.

Introduction

Retained placenta in cows is defined as failure to expel all or part of fetal membranes within 6 hours after parturition. Factors contributing to this include abortion, dystocia, twin deliveries, stillbirths, hypocalcemia, high ambient temperatures, aging of the cow, premature delivery or induction of labor, placentitis, and disruptions in nutrition. Cows affected by retained fetal membranes face higher risks of developing conditions like metritis, displaced abomasum, mastitis, ketosis, and early-lactation culling (Fig. 1) (Laven et Peters, 2014). Their fertility in the subsequent lactation may be negatively affected. Retention of placenta is, in part, mediated by impaired migration of neutrophils to the placental interface in the periparturient period. There's a reduction in proinflammatory macrophage populations in the tissue of the caruncles in cows experiencing retained placenta, potentially leading to decreased collagenolysis and fibrinolysis at the cotyledonary-caruncular interface. Cows with retained placenta also have higher levels of cortisol and lower levels of estradiol in late pregnancy, further impacting their immune function by inducing local and systemic immunosuppressive effects (Fig. 2) (Roberts, J.N., 2022). Types of retention: complete, incomplete and partial. Treatment can be done with manual removal or medication treatment – prostaglandins, estradiol cypionate, ergotamine preparations, oxytocin**,** stilbestrol, injection of collagenase into the placental end of the umbilical artery, intrauterine or injective administration of antibiotics. Administering antibiotics such as Penicillin or Oxytetracycline once daily for 3–5 days can help reduce bacterial complications associated with retained placenta (Risco and Hernandez, 2003).

Factor	Effect
Breed	Ayrshires more susceptible (Erb and Martin 1978)
Year	Herd incidence varies from year to year (Larson and others 1985)
Season	Summer temperatures increase rate (Dubois and Williams (1980). Highest incidence in spring (Wetherill 1965)
Herd	Great inter-herd variability (Roberts 1986)
Length of gestation	Prolonged and shortened gestation increase incidence (Muller and Owens 1974)
Induction	High incidence after use of corticosteroids or PGs (Zerobin and others 1973, Peters and Poole 1992)
Dystocia	Incidence up to 55 per cent (Vandeplassche and Martens 1961)
Hypocalcaemia	Both linked to linolenic acid-rich diets (Barnouin and Chassagne 1991)
Twins	Forty per cent of cases due to twins (Erb and others 1958)
Age	Rates increase with age (Erb and others 1958)
Abortion	Incidence greater if after 120 days (Roberts 1986)
Heredity	Low but not insignificant (Distl and others 1991)
Fatty liver	Predisposes to uterine atony and retained placenta (Morrow and others 1979)
Selenium/ Vitamin E	Good response to supplementation (Julien and others 1976). Over supplementation increases rate (Yde Blom and others 1984)
Vitamin A	Deficiency of vitamin or precursor (β-carotene) increases rate (Ronning and others 1953)
Iodine	Deficiency predisposes to stillbirth and retained placenta (Moberg 1961)
General nutrition	Many factors linked to the condition from increased by-product use (Grunert 1986) to low magnesium, copper, zinc and iron (Zhang and others 1992)

Figure 1: Some of the factors associated with retained placenta (Laven et Peters, 2014)

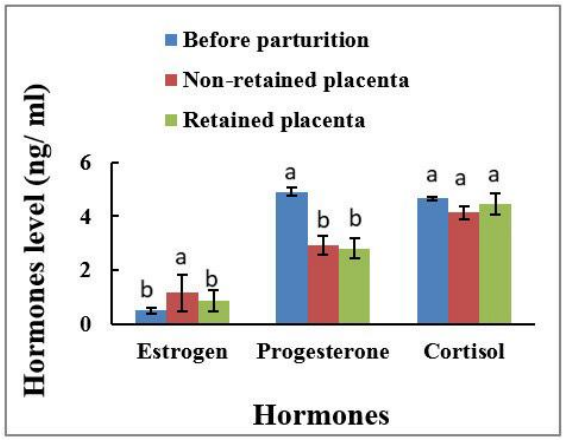

Figure 2: Estrogen, progesterone, and cortisol levels in bovine plasma beforeand after calving in normal and retained placenta release. (Khudhair, N. A., Abbas, H.R., Alsalim, H.A., 2021)

Case description

The clinical case concerns a cow in the village of Tsalapitsa within the discipline of Mobile Clinic in obstetrics and gynecology. The cow had given birth unassisted the night before. The cow is 4 years old and this is her second pregnancy. It is Black and White cow breed. A normal body temperature was found during the examination (38.2). Respiratory movements (20/1min) and heart rate (65/1min) were also within reference range. The calf was in good health too. During the inspection, partial retention of the placenta was observed. Edema of the vulva, stained hair coat, lochia discharge was present and various levels of degenerating, discolored, and ultimately foul-smelling placenta protruding from the vulva (Fig. 3). Vaginal and rectal examinations were performed (Fig. 4). The vaginal examination revealed an open cervix along with edema of both the vagina and cervix. During the rectal examination, uterine asymmetry, edema and pain were detected. Treatment was conducted by intrauterine application of 4 antibiotic pessaries Oxyvet (Oxytetracycline hydrochloridum 500mg) (Fig. 5).

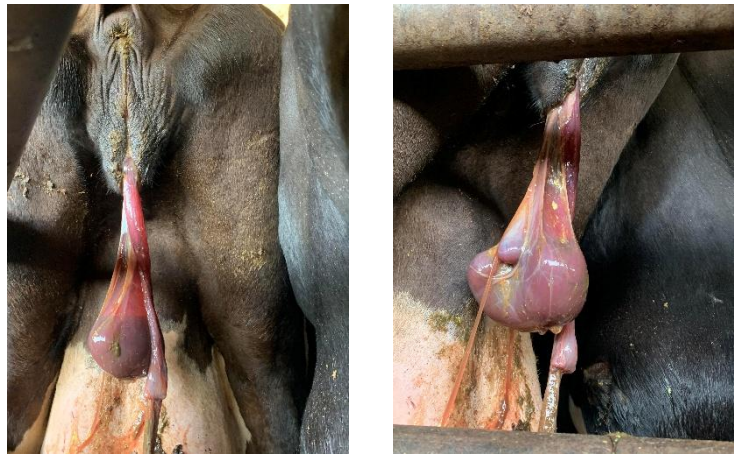

Figure 3: The retained placenta of the cow

Figure 4: Rectal examinations

Figure 5: Pessaries with Oxytetracycline

Results

The cow expelled the retained placenta within three hours following the administration of the medication. No other complications were observed after placental expulsion. There were no clinical signs of local inflammation such as vaginitis, cervicitis and metritis. The calf and the cow were in good health.

Discussion

The use of antimicrobial therapy in treating retention of placenta has shown positive results (Peters and Laven, 1996). However, systemic antibiotics are considered beneficial in cases involving fever (Risco and Hernandez, 2003). Our patient shows no signs of systemic infection, core body temperature is normal, and the process started very recently, so we rely on topical antibiotics. It has been found that intrauterine antibiotics alone are just as effective as when combined with systemic treatments (Drillich, 2006). Nevertheless, since all febrile cows receive systemic treatment, it's unclear whether the fever resolves due to the antibiotics or the cow's natural immune response (Kulasekar *et al.*, 2004). Manual removal of retained fetal membranes (RFM) has been associated with more frequent and severe uterine infections compared to more conservative treatments and has been found to delay the return of the first functional corpus luteum by 20 days (Bolinder *et al.*, 2001). Intrauterine pathogenic bacteria were found in 100% of cows with manually removed RFM compared to 37% in untreated cows at 3 weeks postpartum, and 37% versus 12% at 5 weeks postpartum. Despite current evidence suggesting that manual removal is not an effective treatment for RFM, it is still widely practiced (Goshen *et al.*, 2006). Removing an attached placenta can damage the endometrium and inhibit uterine leukocyte phagocytosis (Vandeplassche *et al.*, 1982), both of which promote bacterial infection (Peters and Laven, 1996). We do not recommend manual removal of retained placenta in our patients. To manage retained placenta, it is important to address factors such as abortions, premature births, and calving difficulties. Proper feeding and maintaining optimal body condition during the dry period, along with preventing cows from becoming overweight, can help reduce the incidence of retained placentas. Herds with a history of selenium deficiency tend to have higher cases of retained fetal membranes, and supplementation with vitamin E and selenium is recommended to lower this risk (Allison and Laven, 2000; Bourne *et al.*, 2007). The synthetic form of vitamin E (alpha-tocopherol acetate) has been shown to be more effective than the natural form (Bourne *et al.*, 2007). Preventive strategies for retained fetal membranes in cattle include ensuring cow comfort and managing nutrition carefully, especially during the transition period (Frazer, 2005). Metabolic diseases can weaken uterine immunity (Zerbe *et al.*, 2003), so providing proper nutrition during the prepartum period helps prevent RFM and other metabolic issues. Deficiencies in vitamins and minerals can compromise general immunity, so supplementation with vitamin E and selenium is advised (Bourne *et al.*, 2007). Administering a balanced vitamin and mineral mix before calving is seen as a preventive measure for avoiding placental retention. Additionally, a single intramuscular injection of antioxidants, such as vitamin E (DL-tocopherol acetate, 1100 IU) and selenium (sodium selenite, 30 mg), three weeks before calving can be used as a prophylactic treatment (Gupta *et al.*, 2005). Infectious diseases like brucellosis can be controlled through proper immunization against the specific pathogens.

Conclusion

The management of retained placenta in cows involves addressing both nutritional and health factors to minimize its occurrence. Key preventative measures include proper nutritional management, particularly during the dry and prepartum periods, maintaining optimal body condition, and supplementing essential vitamins and minerals like vitamin E and selenium. Selenium deficiency and metabolic diseases can impair uterine immunity, increasing the risk of RFM. Additionally, ensuring cow comfort and immunization against infectious diseases like brucellosis is crucial for reducing placental retention. Prophylactic supplementation with antioxidants such as vitamin E and selenium can further lower the incidence of RFM. Overall, a comprehensive approach that targets nutrition, cow health, and management practices is vital for preventing retained placenta in cattle.

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