**Retained fetal membranes (RFM)**

Usually the placenta is passed in 3-8 hours after calving. If it has not passed after 12 hours the placenta is retained and the animal should be treated.

It is a common complication of bovine parturition and, although of little consequence per se, its role in predisposition to infections of the uterus means that retention of the fetal membranes is an important contributor to bovine infertility.

***Aetiology***

Detachment of placenta in the cow involves separation of the finger-like cotyledon villi from the caruncle crypts without significant tearing of either fetal or maternal epithelia.

Detachment of the fetal membranes indicates that uterine involution is progressing normally. Involution of the uterus is accompanied by a massive breakdown of collagen and other proteins. Lack of cotyledon proteolysis (collagenolysis) appears to be the underlying cause of RFM.

Retention of the fetal membranes occurs when the normal processes of dehiscence and expulsion fail to take place. There appear to be three main factors involved in the separation and expulsion of the fetal membranes, namely:

● maturation of the placenta

● Collapse and shrinkage of the cotyledons which lead to physical separation from the maternal crypts.

● Uterine contractions.

**Main causes:**

1. ***Premature birth*** is very commonly associated with RFM. Cattle twins are usually slightly premature; hence, their birth is often followed by retention. heat stress can reduce gestation length and increase the incidence of RFM in dairy cattle.

**2**- ***Placentitis.*** Both placentitis and RFM occur in cases of abortion due to *Brucella abortus,Campylobacter fetus* and moulds such as *Aspergillus* or *Mucor* spp. Roberts (1986) considered the relationship between placentitis and RFM to be causal. Inflammatory swelling could affect the physical union between the maternal caruncle and fetal cotyledon; the involvement of the endometrium could interfere with the endocrine changes of the third stage of labour; or bacterial toxins could affect the myometrium.

**3**- ***Uterine inertia.*** Uterine inertia is frequently suggested as a predisposing factor for RFM (effect of uterine contractions on expulsion of the placenta afterbirth).

**4**- ***The immune system.***

RFM may be related to failure of the release of inflammatory mediators , the primary problem in the condition is, in fact, a reduced immune response of the uterus. Deficient neutrophil phagocytic activity, decreased migration, and decreased superoxide anion production have been proposed as factors in the pathogenesis of RFM in cattle. Moreover, leukocytes are a mobile source of collagenases and may be involved in uterine regression and release of placenta. It has been proposed that major histocompatibility complex (MHC) provides an initial trigger for expulsion of the

placenta and that consequently, maternal tolerance of fetal MHC products will lead to RFM, this mediated by temporary immunodeficiency.

**5**- ***Other factors.***

* There is some evidence of a hereditary predisposition to RFM. Cows of the beef breeds are much less often affected than those of dairy breeds, and in the latter the incidence is higher in Ayrshires than Friesians.
* Old cows are more affected than young ones.
* Springtime calving exerts a predisposing influence.
* vitamin A , E or selenium deficiency.
* There is evidence of a high incidence of RFM in areas deficient in selenium.
* Older cows showed no benefit from the exercise.

***Clinical features***

* It should be noted that cows which fail to expel the fetal membranes within 36 hours or so are likely to retain it for 7–10 days.
* Myometrial contractions largely cease from 36 hours after the birth of the calf, so, if the membranes have not*,*been expelled by this time, freeing of the fetal villi from the maternal crypts eventually occurs as a result of autolysis and bacterial putrefaction. This process starts within 24 hours of birth but takes several days to complete.
* The toxic products of putrefaction accumulate within the uterus causing a fetid odour which pervades the atmosphere and, more importantly,taints the milk.
* Delayed involution of the uterus and a variable degree of metritis commonly accompany retention.
* RFM increased the calving to conception interval, the number of services per conception and the culling rate, whilst reducing milk yield (probably because of reduced appetite).
* When retention is accompanied by metritis, the symptoms depend upon the severity of the uterine disease. As described earlier, severe disease is accompanied by increased pulse and respiratory rates, raised temperature, anorexia, diarrhoea, depression, reduced milk secretion, straining, fetid vaginal discharge and, occasionally, laminitis.

**Treatment**

* manual removal

● administration of ecbolics

● no treatment

● treatment for metritis/endometritis, but no specific treatment of retention itself.

**Manual removal.**The techniques used for manual removal of RFM range from externally applied gentle traction, through to forced extraction and separation of each cotyledon and caruncle.

In this method, the post-cervical portions of the placenta were twisted together into a „rope‟, then a hand was inserted into the uterus and each cotyledon was squeezed out of the base of the maternal caruncle. Continuous steady traction and rotational force were applied with the other hand to withdraw the detached membranes. Even when this procedure is undertaken with careful cleansing of the perineum and as high a standard of asepsis as possible, it causes considerable damage to the uterus. Most evidence shows that manual removal of fetal membranes has a detrimental effect upon fertility.

**Ecbolic agents.**

The most rational measure for both the prevention and treatment of RFM would be to stimulate adequate myometrial contractions so that a „natural‟ dehiscence and expulsion could occur.

**1**- the administration of 10 ml (100 i.u.) of oxytocin.

**2**- In order to attempt to achieve a more reliable response to oxytocin, oestrogenic substances have also been given, in the hope of both increasing the sensitivity of the myometrium to oxytocin and enhancing the natural uterine defense mechanisms. For these reasons, the synthetic oestrogens, have been widely applied to cows with RFM in the form of parenteral injection, or uterine infusion and pessary, and their use has sometimes been followed by injections of oxytocin .

**3**- Prostaglandin F2and its derivatives have been used as ecbolic agents.

Prostaglandins may assist in detachment of the membranes through direct actions upon the placentomes rather than just by an ecbolic action.

***No treatment.***

Some authors were convinced, by the poor response to manual removal and the dubious effects of ecbolic agents, that uncomplicated cases of RFM require no treatment. The manual removal of the placenta can create uterine trauma and delay the return to normal reproductive status. It appears better to allow the placenta to separate of its own accord or to withdraw it gently from the uterus 7-10 days post calving. If the cow is ill with metritis, antibiotic treatment and/or uterine drainage are probably indicated.

***Treatment for metritis/endometritis.***

Some degree of endometritis is invariably associated with RFM. Hence, many therapeutic regimens have been used either to attempt to prevent endometritis, or to treat it once it has occurred.

Antibiotics can be given in the form of pessaries or as infusions that have been formulated for intrauterine use.

Antibiotics that have been formulated for intrauterine infusion include oxytetracycline and cephapirin, both of which are active in the uterine environment and have a broad spectrum of action.

It has been common practice, after forced extraction of RFM, or after unsuccessful attempts at extraction, to place antibiotics into the uterus in an attempt to prevent endometritis.

Intrauterine antibiotics reduce odour, but they also reduce the rate of putrefaction of the membranes and reduce the level of intrauterine phagocytosis, thereby prolonging retention.

The use of systemic antibiotics in cows that are ill with metritis, Most studies agree that, where retention is associated with septic metritis or systemic signs of illness, appropriate, vigorous cctreatment regimens should be instituted.