Clinical Management of Retention of Fetal Membranes in Cow
Case Report

A clinical report presented in partial fulfillment of the requirement for the degree of DVM (Doctor of Veterinary Medicine)

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A clinical report submitted as per approved style and content

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PLAGIARISM CERTIFICATE

Myself Suriya Sultana Sorna strongly assure you that I have performed all works furnished here in this report. Data have been collected from Military Farm Chittagong, Bangladesh Army, Upozella veterinary hospital, Gaibandha Sadar, Gaibandha & national journals, website and reference books.

All references have been cited duly. No data have been copied in any form.

Therefore I reserve entire responsibility of this report.

The Author

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ABSTRACT

Retention of placenta is one of the most common postpartum conditions in farm animals associated with infertility and many other complications when not treated promptly and adequately. In this report, two different cases of placenta retention recently handled at Military farm Chittagong, Chittagong Cantonment, Bangladesh Army and Upozella veterinary hospital, Gaibandha Sadar, Gaibandha are described. In the first case, a crossbred Jersey cow weighted 300kg in sixth parity was presented with the history of normal calving but the placenta was not expelled about 20 hours after calving. This was treated successfully with 20IU intramuscularly. The placenta was expelled 6 hours after the oxytocin injection. The case was completely cured after two week. After one month follow up further no complication was found on that cow. In the second case, a 6-year old Friesian cow weighing 350kg was presented to the Upozella veterinary hospital, Gaibandha Sadar, Gaibandha with primary complaint of inappetance and fouled smelling discharges from the vulva region. The cow had a history of calving 36 hours ago but the calf did not survive. Small portion of placenta was observed as protruding out from the vulva region. Through physical evaluation of the cow by per vaginal examination, the condition was diagnosed as retention of placenta. The case was treated by applying traction on the little stump of the placenta hanging out of the vulva. But after one month the cow further showed complication with the sign of Pyometra. In conclusion, this report has shown that retention of placenta is a frequent clinical phenomenon in cattle and can be successfully treated with gentle traction and oxytocin administration. But several times it may show further complication when not treated adequately.

Keywords: Cow, Fertility, Oestrogen, Oxytocin, Placenta, Traction

ABBREVIATIONS

Abbreviations	Elaborations
CVASU	Chittagong Veterinary and Animal Sciences University
RVFC	Remount Veterinary & Farms Corps
Ctg.	Chittagong
I/V	Intravenous
ROP	Retention of placenta
Bwt	Body Weight

INTRODUCTION

Retained placenta is one of the most common complications occurring in animals following parturition (Roberts, 1986). Retained fetal membranes are the failure of the entire or partial placenta to be expelled for duration of time that is considered to be longer than normal physiologic limits (Radostits, 2007). In cattle, fetal membranes are considered pathologically retained in the cow if they are not expelled by 24 hours after calving. The incidence of retained fetal membranes in dairy cattle is 5% to 15% following normal parturition which is higher than beef cattle (Arthur, 1979). The principle cause of retained placenta in cattle is a disturbance in the loosening process between the fetal cotyledons and the maternal caruncles and it is attributed to many infectious and non-infectious factors (Bretzlaff, 1988). According to Kahn *et al.* (2005), the incidence of retained placenta is increased by abortion, dystocia, hypocalcaemia, twin birth, and high environmental temperature, advancing age of the cow, induction of parturition, placentitis and nutritional disturbances.

Parturition occurs at the end of gestation and can be delineated into three stages (Noakes et al., 2009). The first culminates into dilation of the cervix. The second stage is expulsion of the foetus while the third stage terminates at the expulsion of placenta. In ruminant, the maternal caruncle fuses with the foetal cotyledon like a 'hand-in-glove' to produce placentome, a functional unit of the placenta (Senger, 2005). This mode of placentation in cow like other ruminants has been described as synepitheliochorial (based on five layers of membrane between the maternal and the foetal blood) and cotyledonary (based on the shape of chorionic villi around the foetus and the distribution of the contact sites between the foetus and the maternal endometrium) (Bowen, 2011).

Two factors are crucial for effective expulsion of cow placenta during parturition. First there must be detachment of the placenta from the maternal caruncles. Secondly, there must be enough expulsive force from the uterine contraction to initiate further detachment and cause expulsion of detached placenta with no mechanical obstruction. Whenever there is a compromise in either of these two underlying factors, Retention of placenta (ROP) is imminent (Jackson, 2004). Collagenase secreted by the placenta during parturition leads to weakening of the mechanical link and subsequent detachment of the placenta from the uterus. The mechanical actions of uterine contraction during the first and second stages of parturition stimulate compression of the placentomes and begin the separation of the two parts (foetal cotyledons and maternal caruncles), while placenta expulsion from the uterus is effectively completed with further contraction during the third stage (Hafez & Hafez, 2006). These mechanisms require some time. Therefore, placenta is not said to be retained in cattle until 12 hours after parturition (Jackson, 2004)

ROP has a significant adverse impact on health, welfare, milk productivity and reproduction of affected animals in the postpartum period (Laven & Peters, 1996). Therefore, for cattle production to be more economically viable the incidence of ROP has to be reduced and the adversity of the condition mitigated through prompt medical attention to treat the condition.

Eleven Swedish postpartum cows with retained fetal membranes (RFM) were studied to determine the intrauterine bacterial flora. Bacteriological examination was performed from twice weekly uterine biopsies. A total of 161 biopsies were collected during the first 8 weeks postpartum of which 82 (50.9 %) were found with bacterial growth. Seventy-one of the 82 bacteria-positive biopsies (86.6 %) showed mixed infections whereas the remaining 11 (13.4 %) were pure cultures. Generally, a total of 322 isolates belonging to 12 different genera of bacteria, 6 facultative and 6 obligate anaerobic pathogens

were identified. Mixed infections were most frequent for *Actinomyces pyogenes* together with obligate anaerobic bacteria, especially *Bacteroides levii/spp*. and *Fusobacterium necrophorum*. All of the studied cows had an infection that involved the first two genera of bacteria, whereas *F. necrophorum* was found in 8 of the 11 animals (C.C. Karstrup, 2017). The postpartum environment of the uterine lumen supports the growth of a variety of aerobic and anaerobic bacteria. Many of these bacteria are contaminants in the uterine lumen and are removed by a range of uterine defense mechanisms (Kasimanickam, 2004).

The expression of clinical uterine infection depends on the balance between factors such as the animal, immunity, the number and pathogenicity of the microbes, and the uterine environment. Typically, 25–40% of animals have clinical metritis in the first 2 weeks after calving, and disease persists in up to 20% of animals as clinical Endometritis. Although the clinical signs of uterine disease such as purulent material discharging from the uterus into the vagina are readily detected, the role of subclinical uterine disease is less well characterised but is an emerging issue. Up to 50% of cows 40–60 days after calving had neutrophils in the uterine lumen or endometrium, concomitant with inflammation of the tissues, and subclinical endometritis reduces conception rates (Kasimanickam et al., 2004; Gilbert et al., 2005)

In this article, we report two cases of ROP in cow, one of which was presented to Military farm Chittagong, Chittagong Cantonment, Bangladesh Army while the last one was observed Upozella veterinary hospital, Gaibandha Sadar, Gaibandha. The causes, treatment and preventions of this postpartum condition are further discussed.

Case 1:

History if the patient: A crossbred Jersey cow weighted 300kg in sixth parity was presented with the history of normal calving but the placenta was not expelled about 20 hours after calving. The vaccination and deworming status were up-to-date.

Physical examination: Physical examination revealed that the cow rectal temperature 101.2º F, heart rate 60b/min, respiratory rate 39c/min, pale mucous membrane with capillary refill time of 3 sec. The cow was weak and on recumbent position. The fetal membrane was observed as protruding out from the vulva region in small portion. Through physical evaluation of the cow by per vaginal examination, the condition was diagnosed as retention of placenta.

Treatment and Management Procedure: The therapeutic plan for this case was to give Oxytocin 20IU intramuscularly and repeated after 4 hours again. The placenta released after 6 hours. For post-operative treatment Ciprofloxacin (dosed at 10 mg/kg bwt) for 7 days and Pheniramine maleate (dosed at 0.1 mg/kg bwt) for 7 days, were given. The case was completely cured after two week.

Progression: The case was followed up for 2 weeks after treatment, and the Cow was found to respond well to the treatments. The cow was bright and alert. After one month follow up further no complication was found on that cow.

Case 2:

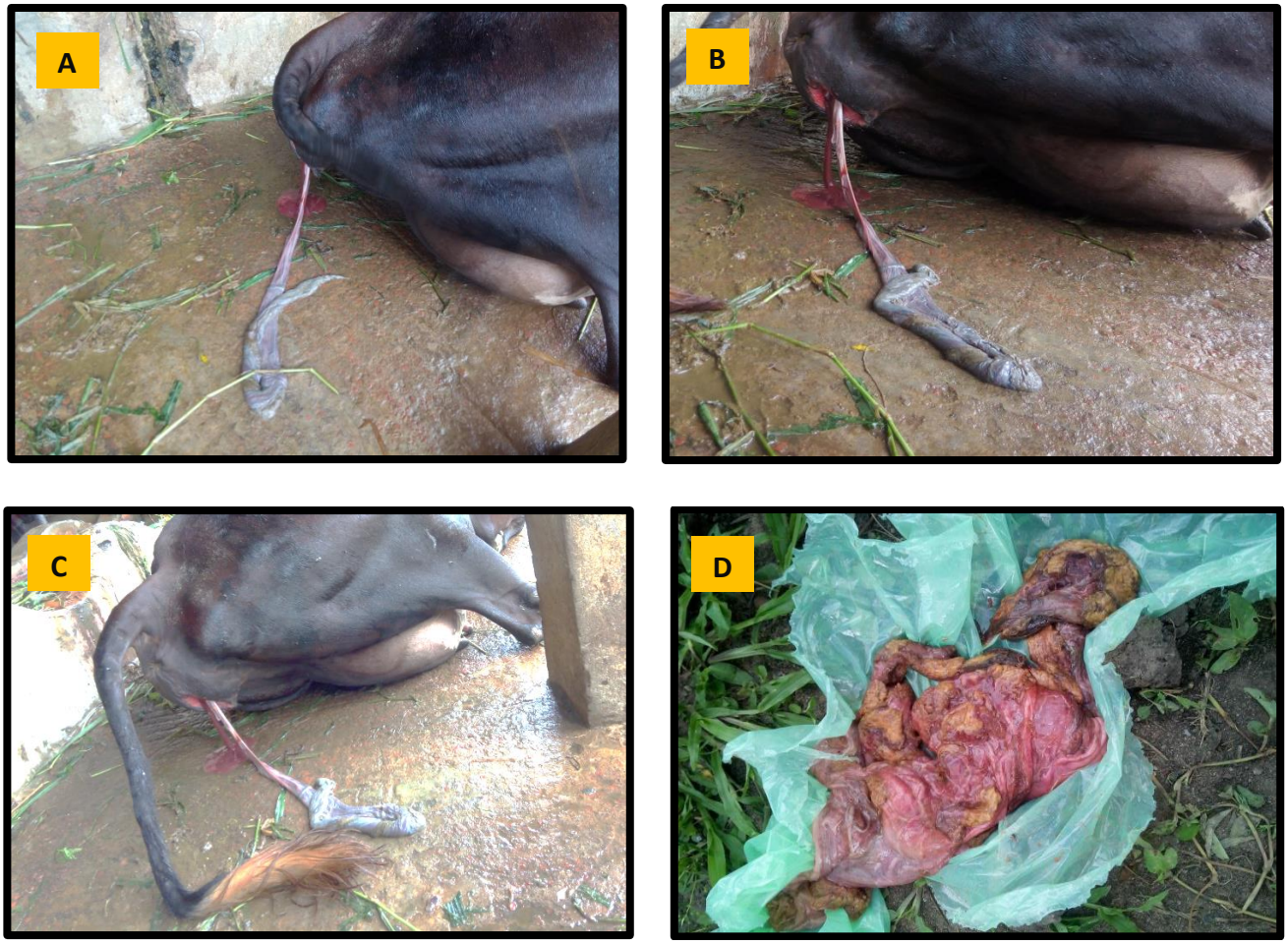
History if the patient: A 6-year old Friesian cow weighing 350kg was presented to the Upozella veterinary hospital, Gaibandha Sadar, Gaibandha with primary complaint of inappetance and fouled smelling discharges from the vulva region. The cow had a history of calving 36 hours ago but the calf did not survive. Oxytocin was injected once on the day of calving by the farmer. The farm practices intensive farming system, while the vaccination and deworming status were up-to-date.

Physical examination: . Physical examination revealed that Small portion of placenta was observed as protruding out from the vulva region. The rectal temperature was 103ºF, heart rate 60b/min, respiratory rate 39c/min; mucous membrane was pale with capillary refill time of 4 sec. The cow was weak and on standing position. Through physical evaluation of the cow by per vaginal examination, the condition was diagnosed as retention of placenta.

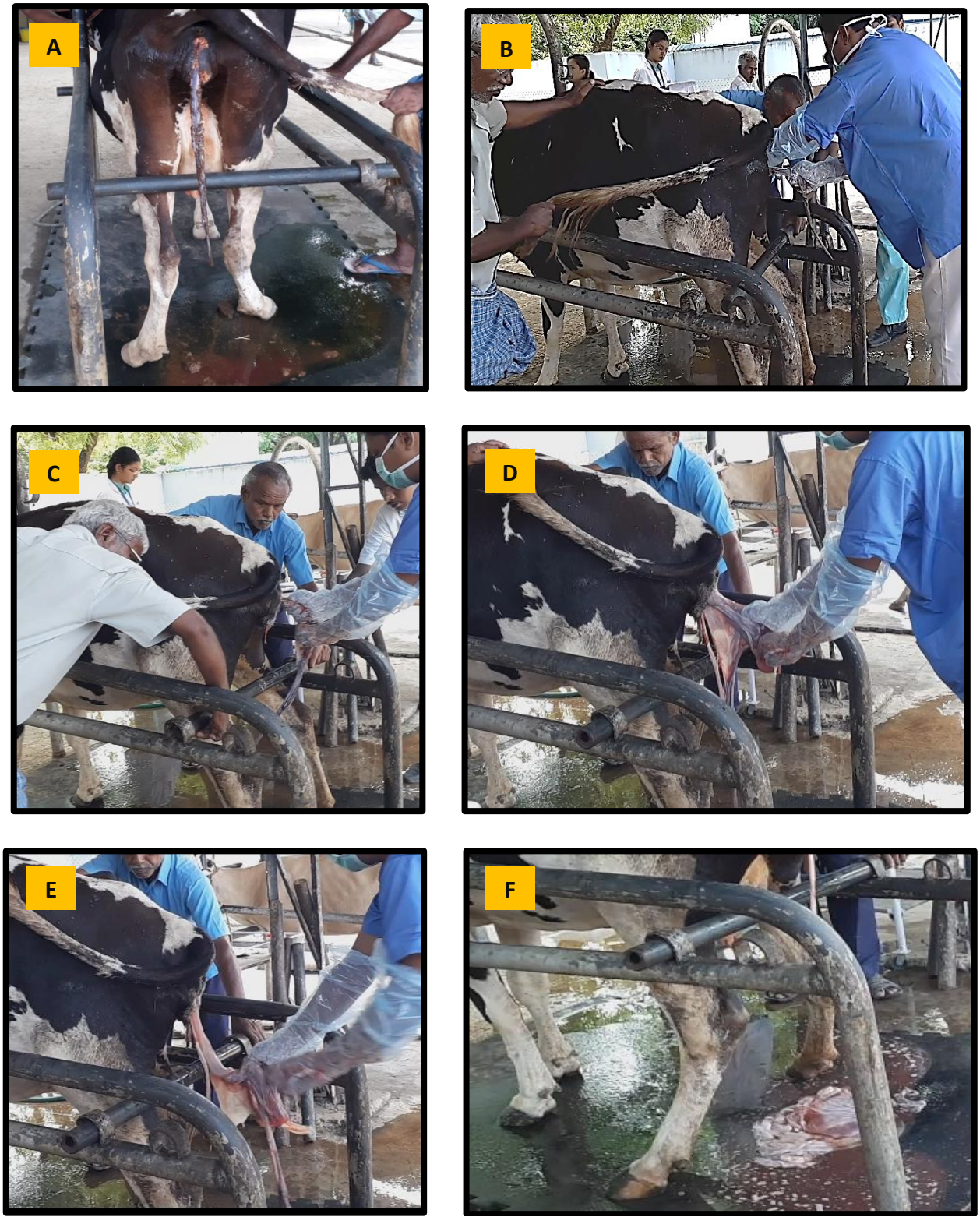
Treatment and Management Procedure: The hanging placenta was held in right
hand and twisted like a rope in order to manage easily during its manual removal. A lubricated left hand was advanced into site of placental retention (right horn). Individual cotyledons and caruncles were grasped between thumb and fingers and structures were separated by rolling, pushing and squeezing motion. Simultaneous traction on placenta with right helped in easy separation.
The cow was treated with four intrauterine boluses and each bolus contained 400 mg of Metronidazole and 2.5g Streptopenicillin (2.5 g) intramuscularly for five days and 200mg meloxicam intramuscularly for three days.

Progression: The case was followed up after one week of treatment, and the Cow was found to respond well to the treatments. But after one month of treatment the cow further come with same complain of foul discharge. Clinical examination revealed that there was purulent discharge and foul smelling coming out from the vagina. The rectal temperature was 103ºF. Through physical evaluation of the cow and per vaginal examination, the condition was diagnosed Pyometra. The cow was further treated with PGF2α and Antibiotic ceftriaxone systematically. After one week the patient was completely cured. And after one month follow up no further complication was reported.

LIST OF FIGURES



Figures of Case-1: A. The small portion of placenta protruding out before treatment. B. Condition 2hrs after first injection of oxytocin. C Condition 4hrs after first injection of oxytocin. D. Condition 5hrs after first injection of oxytocin. F. Expelled out placenta after 6hrs.



Figures of Case-1: A. The small portion of placenta protruding out before treatment. B+C+D+E+F. Manual traction of placenta step by step. F. Expelled out placenta.

CONCLUSION

From this study it was revealed that ROP is a great problem along with other reproductive diseases in cows. Although the occurrence of retained fetal membrane doesn't affect the reproductive performance, it is better to prevent the condition in animals because there is a chance it may worsen and lead to toxaemia and eventually infertility or death of the animal. The incidence and severity of ROP can be reduced by breeding sound management provided with balanced nutrition, routine deworming and vaccination. Scientific management system should be provided to the cows during pregnancy and after parturition especially last 3 months of pregnancy and first 3 months of parturition to reduce the dystocia. Farmer awareness is a great important thing in rearing dairy cows in village level. Losses from ROP can be minimized by:

1. Breeding sound management provided with balanced nutrition.
2. Close observation of cows during calving.
3. Provision of suitable handling facilities.
4. Technical capability to aid delivery.
5. Judgment to seek professional assistance promptly when indicated.
6. Proper hygienic management of the farm house / cow shed.

DISCUSSION

In conclusion, this report has shown that retention of placenta is a frequent clinical phenomenon in cattle and is successfully treatable with gentle traction and oxytocin administration. Manual removal of retained membranes is no longer recommended and is potentially harmful. There is a variety of treatment that has been suggested for retained placenta in cows and this include administering myometrial stimulants with intrauterine and systemic antibiotics. Oxytocin has long been used to expel the placenta after delivery, however it does not reduce the incidence of retained placenta because oxytocin is already being secreted by normal cows at parturition and it helps contract the uterus and expel the placenta that is fully detached. However, if the placenta is not detached from the caruncles oxytocin will not hasten its passage (Miller et al., 1984). So, in relation to this case, although the farmer administered oxytocin, the condition still persisted. Another important concern regarding retained placenta is its consequence which may lead to septic metritis (Ball et al., 1984). Thus, it is important to cover the animal with antibiotics such as broad spectrum antibiotic (oxytetracycline) (Abdullah et al., 2014). Caution should be taken as the milk from cows treated with oxytetracycline can only be consumed 4 days after the last treatment. As for prevention, cows should be given adequate balanced rations of calcium, phosphorus, vitamin A and E and selenium (Smith, 1990).

In both cases, the limitations were more elaborate epidemiological studies to elucidate the risk factors involved. However, in the field condition as special experimental equipments were not available thus detail evaluation could not be done. But the study will be helpful in management and treatment of retain placenta in both hormonal and manual method.

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