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# Correction and Management of Retained Macerated Foetus in a Crossbred Dairy Cow

**Open Access** **Case Report**

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## Abstract

A five years old cross breed Holstein Friesian cow with a history of prolonged pregnancy that takes over 11 months was brought to the clinics of Veterinary college, Mekelle university. The cow showed no sign of parturition and was apparently healthy and confirmed as retained macerated fetus (RMF) after clinical examination of the cow. A repeated attempt using luteolytic drug (PGF2α) was used to treat the RMF but the response was not satisfactory. Thus, the RMF was successfully corrected using surgical removal through left oblique paralumbar celiotomy in standing posture. The cow had an uneventful recovery.

**Keywords:** Dairy Cow; Retained macerated foetus; Surgical management

## Introduction

In cattle, gestational duration is influenced by different factors such as the breed, number of fetus, parity, calf sex, fetal genotype, and environmental factors (nutrition, temperature, and season) *(Norman et al., [1])*. Prolonged pregnancy is an infrequent condition in dairy cattle that resulted from longer gestational period than the normal range without signs of delivery at their due date and commonly results from fetal anomalies *(Newman, et al., [2])*. Fetal anomalies are fetal malformation or abnormalities that pose difficulty in vaginal delivery due to feto-pelvic disproportion. It is triggered by different factors such as genetic and environmental factors that causes defective development in foetus. Moreover, other causes like teratogenic agents, drugs, hormones, chemicals, Gamma radiation, trace elements, variation in temperature, and various infectious agents are also resulted in fetal anomalies *(Dhindsa, Kumar, Thangamani, et al., [3-5])*. Retained fetal maceration occurs when the cervix is open and miscellaneous bacteria invade the uterus from the vagina. It is uncommon where the dead fetus retained in the uterus. Initially, the fetus becomes distended with gas and it subsequently decomposes. The wall of the uterus becomes thick and surrounds the disintegrating fetus like a capsule, as if to wall off an abscess. After about the 3rd month of gestation, fetal bones resist maceration. Sharp pointed bones (fetal ribs) may deeply embed and perforates in the uterine wall *(Drost, Kumar, Thangamani, et al., [4-6])*. Most of the cow does not display severe systemic illness but, the cow may become slightly febrile, anorexic, depressed and drop in milk production that are usually noted in the lactating cow. The diagnosis is readily made by transrectal palpation. Upon rectal palpation, the uterus become thick-walled, firm, absence of fluctuation and crepitation of the fetal bones in advanced cases. Besides, the cow displays only vague signs of intermittent straining, accompanied by a foul, purulent vaginal discharge containing small bones *(Drost, Fubini, Newman, et al., [6,7,8])*. Retained macerated foetus may be more serious and fatal due to the presence of the decomposing fetus, failure of the cervix and genital canal to dilate normally and uterine inertia. Thus, the prognosis for future fertility of the cow is very poor due to the extent of endometrial damage and the cow should simply be culled. As a treatment, luteolytic dose of PGF2α can be given to induce estrus and attempt to evacuate the contents of the uterus if the condition of the cow warrants treatment. However, some bones may be partially embedded in the wall or lodged sideways, preventing their expulsion. Thus, surgical removal using caesarean section is the best option for complete removal of isolated bones in the uterus *(Brar, Noakes, Rangasamy, et al., [9,10,11])*.

## Case History and Clinical Examination

Five-years-old, multiparous, apparently healthy Holstein Friesian crossbreed dairy cow with a good body condition was presented to Mekelle university, veterinary college clinic before a week with history of vaginal discharge. After detailed clinical examination, the cow was diagnosed for prolonged pregnancy that takes more than 11 months due to retained macerated fetus. Besides, there was also no sign of labor and parturition and proper record on the time of insemination and proposed dated of parturition was taken according to owner's history. Besides, any abnormal or disease condition was not recorded during the gestational period. Repeated attempt was made to remove the macerated fetus by injecting prostaglandin F2α (PGF2α, Estrumate) (500μg). Then, the case was referred to the Veterinary Hospital, College of Veterinary Science (CVS), Mekelle University (MU), Ethiopia. Then, a detailed

clinical examination was performed by taking all the vital parameters including heart rate, respiratory rate, pulse rate, and mucous membrane and it was found within physiological limits. In addition, vaginal examination revealed muco-purulent discharge without odor and size of one finger dilatation of external of cervix. On rectal examination fetal mass was not palpable in the uterine horn and the uterus was contracted over the foetus with absence of fetal fluids and fremitus. Accordingly, based on the previous history and clinical observation, the case was diagnosed as retained macerated fetus and the team the case was managed surgically by cesarean section.

## Surgical Correction, Post-operative follow up and Result

Following proper physical and chemical restraining and aseptic preparation of the surgical site (left flank), the cow was kept on appropriate direction for the next surgical procedure. A sharp vertical skin incision with a distance of approximately (~40 cm long) was made on the left flank region approximately (~10 cm) below the lumbar transverse process *(Figure 1A).* After blunt dissection of the skin from the subcutaneous tissue, the incision was continued through the external and internal abdominal oblique, transverse abdominal muscle and peritoneum. Then all muscular layers together with skin were grasped with handheld retractor to get sufficient surgical field and exposure to the uterus. Besides, the uterus was retracted from its right position to the left one *(Figure 1B).* The retained macerated fetus was removed after gently incision approximately (~40 cm) was made on the uterus. Then the uterus was filled with abnormal yellow colored fluid and was properly drained and removed together with the dead placentome and caruncles. Additionally, the different type of fetal bones was taken out with the help of an assistant and the uterus was washed and cleaned with sterile isotonic saline solution before suturing *(Figure 1C).* In addition, bleeding during the procedure was managed by applying sterile gauze, using different straight and curved hemostatic forceps and topical infiltration of epinephrine on bleeding site depending on the site and condition. The uterus was closed using a double layer of Utrecht suturing pattern with 1-0 size sterile absorbable polyglycolic acid (Shandong Sinorgmed Int'l Co., Ltd, China) and replaced in the abdomen to its normal position. Then, the peritoneal incision was closed with a continuous lockstitch pattern and all three abdominal muscular layers were separately closed with simple interrupted pattern using 2-0 size sterile absorbable polyglycolic acid. Moreover, the skin was closed using silk 2-0 size in a horizontal interrupted mattress. Lastly, the area was properly cleaned and dressed with a 2% tincture iodine solution and admitted home. Postoperative treatment consisted of intravenous fluid therapy (Ringer Lactate, 1000ml) and Injection of Ceftriaxone (5mg/kg) Parkinson Pharma, India) for five days. The dressing of the surgical site was done at second- and third-days post-operative up to fourteen days until it completely healed. Tetracycline wound spray was also applied around the wound. After 20-day post-operation, the wound was healed completely and after two months of follow-up, the cow was under good health status.

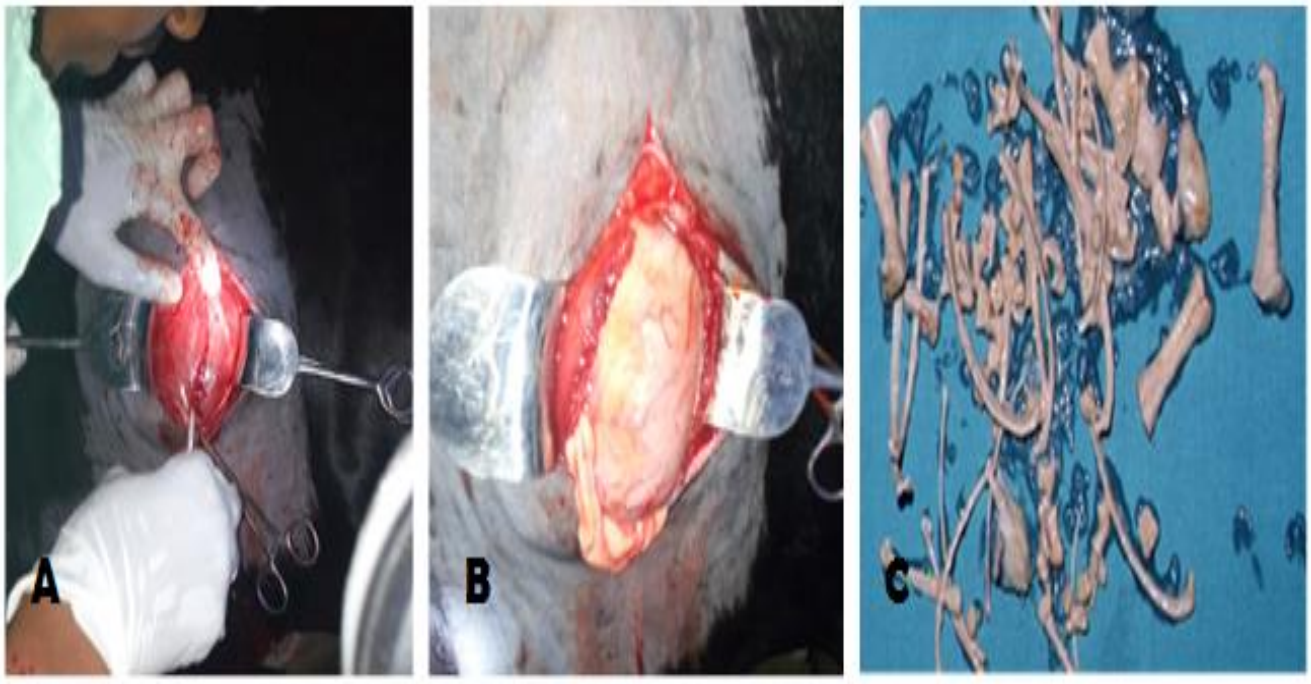


**Figure 1:** Surgical procedure during Caesarean section in Crossbreed of dairy cow
(A). A Vertical incision on the skin and abdominal muscle of the left flank area
(B). Presentation of uterus after incision all abdominal layers
(C). Demonstration bones of the macerated fetus taken out from the uterus

## Discussion and Conclusion

In the present case, repeated attempt of was done to remove the retained macerated fetus by administration of luteolytic drug (PGF2α, Estrumate) and only few bones were removed. This finding was comparable with *(Rangasamy et al., [11])* where repeated and large dose of luteolytic drugs (Cloprostenol, Estradiol valerate and Oxytocin) was administration to remove retained macerated fetus with no response. In most cases, the left oblique approach is preferable because of less peritoneal cavity contamination and with less interference of intestinal content during the exteriorization of the uterus. However, standing left paramedian celiotomy is preferred for caesarean sections in the cow by some surgeons *(Fubini, Rangasamy, Schultz, et al., [7,11,12])*. Similarly, in this case, left oblique para lumbar celiotomy was performed to remove the retained macerated foetus. This is in agreement with the surgical approach used in this case report. According to different research outputs, cows are more likely to become recumbent during attempts to exteriorize the uterus, due to the pain that arises from traction on the broad ligament during difficult uterine manipulations. Cows that remain standing during the procedure have a better chance of survival rate, (91-94%). Cows that fall down intraoperatively were more likely to develop peritonitis and experienced greater postoperative mortality compared with cows that remained standing during the surgery *(Newman, Schultz, Singh, et al., [2,12,13])*. This report agrees with the current case report in terms of the occurrence of intraoperative recumbency and post-surgical survival rate. Retained macerated foetus (RMF) is mainly caused due to foetal death or incomplete abortion and leads to either mummification or maceration that is mainly due to entry of autolytic bacteria in uterus and loss of corpus luteum at any stage of gestation. Besides, RMF is commonly associated with infectious agents such as Campylobacter fetus, Trichomonas fetus, Brucella and Leptospira species. Foul smelling vaginal discharge, thick and heavy uterine wall, foetal bones floating in pus and palpation of crepitation sound in the uterus are the common clinical signs observed. The prognosis of RMF condition become poor if the condition is not managed earlier due to the endometrium. Caesarean section should be considered as a last resort in valuable cow *(Thangamani, Dhindsa, Brar, et al., [5,3,9])*. Similarly, in the current case report, the same surgical approach was used to manage the case. Furthermore, post-operative antibiotics are indicated in case of dead calf, prolonged gestation and dystocia, macerated fetus, in compromised uterus, extensive preoperative obstetric manipulations and abdominal contamination. The use, type, and frequency of antibiotics vary depending on the case. Procaine penicillin G, oxytetracycline, ceftiofur, and florfenicol were commonly used antibiotics. *(Newman, Schultz, et al., [2,12])*. In this case, ceftriaxone was used post-operatively in management of this case. Additionally, post-operative complications due to paralumbar incisions are infections, subcutaneous emphysema and dehiscence. Thus, differences in surgical site preparation, local anesthetic technique, incision length, time of surgery, and the use, type, and duration of post-operative antibiotics are among some of the common predisposing factor for post-surgical complication *(Newman, Cattell, Dehghani [2,14,15])*. There was no post-operative complication during handling of the current case report.

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