

INNOVATION IN BOVINE OBSTETRICS: CESAREAN SECTIONS AS A CORNERSTONE IN HEMATITIC FETAL MUMMIFICATION SOLUTIONS

Dr. Meera Lakshmi Nair

Department of Veterinary Gynaecology and Obstetrics, Veterinary College and Research Institute
Orathanadu, Thanjavur – 614 625, Tamil Nadu

Abstract

Fetal mummification is a gestational complication that typically occurs during the fourth, fifth, or sixth month of pregnancy in cows, resulting from the intrauterine death of the fetus. A 4-year-old pluriparous Jersey crossbred cow was presented to the Obstetrics Unit of VCC, VCRI, Orathanadu with a history of mild vaginal discharge and anorexia. The cow had been inseminated eight months prior. Clinical examination revealed a normal physical condition, but vaginal examination showed a two-finger dilation of the cervix's external os and a thickened wall. Rectal examination allowed palpation of a hard, firm fetal mass within the tightly contracted uterus, with no signs of fetal fluid, movement, or placentomes. A tentative diagnosis of fetal mummification with a strong likelihood of an anomalous fetus was made. The cow was treated with PGF₂α (500 µg; i/m) to induce parturition over two days and monitored for 72-96 hours. Despite daily assessments for cervical dilation over three days, the cow did not respond to PGF₂α treatment. Consequently, a C-section was performed following standard protocol, resulting in the delivery of a mummified fetus. The fetus was reddish-brown, and the eye sockets were empty. Postoperative care included antibiotics, anti-inflammatory medications, and antihistamines for seven days at VCC, VCRI, Orathanadu. The cow made a full recovery, and after 60 days, its estrous cycle resumed normally.

Keywords: Fetal mummification, C section, Jersey Crossbred cow.

Introduction

Fetal mummification is a rare reproductive disorder in bovines, characterized by the retention of a dead fetus in utero without any decomposition or autolysis process (Ginther, 1995). The incidence of fetal mummification in cattle ranges from 0.1% to 0.8% (Waldner et al., 2001), and it is considered a significant cause of economic losses in the livestock industry due to decreased reproductive efficiency and increased veterinary interventions (Peter et al., 2014). Among the different etiological factors, haematic fetal mummification is the least explored area, necessitating further research to understand its underlying pathophysiology and develop effective interventions. This study aims to investigate the crucial role of cesarean section (C-section) in addressing haematic fetal mummification in bovines, providing valuable insights for the veterinary practitioners and livestock farmers. Haematic fetal mummification is a unique form of fetal death, where the fetus becomes encapsulated within a blood clot, leading to its retention in the uterus (Sloss et al., 1978). The exact mechanism of haematic mummification remains unknown; however, several factors have been implicated, including placental insufficiency, congenital abnormalities, infectious agents, and traumatic injuries (Roberts et al., 1986). Moreover, the pathogenesis of haematic mummification is

believed to involve a combination of fetal anoxia, coagulation cascade activation, and the formation of a protective clot that prevents the entry of bacteria and maternal immune cells (Arthur et al., 1996). Despite the low prevalence, haematic fetal mummification poses significant challenges for the affected animals and their owners. The condition is often associated with prolonged gestation periods, dystocia, and secondary infections, leading to reduced fertility and production efficiency (Peter et al., 2014). Furthermore, the diagnosis of haematic mummification can be difficult, as the clinical signs are often nonspecific and may resemble other reproductive disorders, such as hydrops amnion or fetal maceration (Schlafer et al., 2000). Consequently, there is a need for accurate diagnostic tools and effective treatment strategies to mitigate the impact of haematic fetal mummification on bovine reproductive health. Cesarean section has been suggested as a viable option for the management of haematic fetal mummification, as it allows for the removal of the mummified fetus and blood clot without causing significant damage to the uterus (Roberts et al., 1986). Several studies have reported successful outcomes following C-section in cases of haematic mummification, with minimal complications and a rapid return to normal reproductive function (Peter et al., 2014; Schlafer et al., 2000). Moreover, C-section is considered a safe and efficient procedure in bovines, with low morbidity and mortality rates (Fubini et al., 1995). Therefore, C-section may represent a promising approach for the treatment of haematic fetal mummification, potentially reducing the economic burden associated with this condition. In conclusion, haematic fetal mummification is a complex and poorly understood reproductive disorder in bovines, with significant implications for animal welfare and production efficiency. This study aims to elucidate the critical role of C-section in addressing haematic fetal mummification, providing a foundation for improved diagnostic and therapeutic strategies in the future. By advancing our understanding of this rare condition, we hope to contribute to the ongoing efforts to enhance bovine reproductive health and optimize livestock productivity.

Case history and Observation

A 4 years old pluriparous Jersey crossbred cow brought to the Obstetrics Unit of VCC, VCRI, Orathanadu with history of mild vaginal discharge and anorexia since a day before presentation and was inseminated 8 months back. On clinical examination all vital parameters were found normal. On vaginal examination revealed two fingers dilatation of external os of the cervix along with thickened wall was noticed. Hard and firm mass of the fetus along with the absence fetal fluid, fetal movement and placentomes were palpated in the tightly contracted uterus on rectal examination. Transrectal palpation and ultrasonographic examination show the mummified fetus as a compact, firm, and immobile mass without placental fluid or placentomes (Fig. 3). The ultrasound examination reveals the absence of a heartbeat. The case was confirmatively diagnosed as fetal mummification.

Treatment and Discussion

The animal was treated with 500 µg of PGF_{2α} (i/m) for the course of two days. The animal was repeatedly examined for the dilatation of the cervix daily for 3 days but animal does not respond to the PGF_{2α} treatment. Therefore, caesarean section was decided to perform laprohysterotomy by left flank incision under local infiltration anaesthesia with 2% lignocaine hydrochloride using left upper lateral (Oblique) approach. As per the standard procedure, about 15 inches long incision (Fig. 3) was made on skin and muscles were severed. The mummified fetus was removed from the uterus

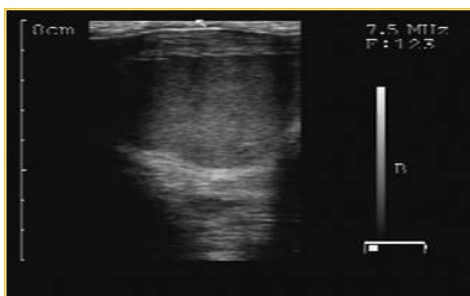
as reddish brown in color with the eye balls were empty and chocolate colored mucus coated. (Fig. 3) The uterine incision was closed with Cushing's followed by Lambert suture pattern using PGA-2 and abdominal muscles were closed with continuous interlocking suture pattern by using PGA-2. Finally, the skin was closed by horizontal mattress suture pattern with nylon. The crossbred cow was treated post-operatively as in patient in VCC, VCRI, Orathanadu with Streptopenicillin 5gm, i/m, 40 IU of Oxytocin i/m, Flunixin meglumine @1.1mg/kg b.wt i/m, Chlorphenaramine maleate @ 0.5mg/kg b.wt i/m, Meloxicam @ 0.5mg/kg b.wt i/m for seven days and skin sutures were removed after 10 days (Fig. 3). The animal had an uneventful recovery. After 60 days animal resumed normal estrous cycle.

Haematic mummification is one of the common features of abnormal fetal development in bovines. The incidence of this condition has been reported to vary between 0.13 to 1.8%, although in some herds it may be higher (Barth, 1986). The death of a fetus in the uterus without simultaneous luteolysis and cervical relaxation ensures fetal retention. Mummification results due to autolytic changes in fetal tissues and resorption of fetal fluids in a sterile uterine environment. It is rather difficult to exactly ascertain the cause of fetal death in mummification. Genetic factors have been implicated as the condition was observed to be more common in Jersey and Guernsey breeds and occurred with high frequency in one family of Friesian cows (Logan, 1973; Tadesse *et al.* 2015). Mummification is generally associated with a well-developed corpus luteum. The treatment of choice remains as induction of luteolysis by injection of PGF₂α, that follows the expulsion of the mummified fetus within 2 to 4 days (Jackson and Cooper, 1977; Katiyar *et al.* 2015). Present cases of mummified foetuses were also not responsive to the treatment and Caesarean section in these animals was done as describe by Bhuyan *et al.* (2016). As the uterus is generally tightly contracted around fetus in mummification, caudal flank laparotomy is suitable choice for caesarean section that was also used in this study (Lefebvre *et al.*, 2009). In cases of incomplete dilatation of cervix after hormonal therapy caesarean section seems to be last resort. In caesarean section, through left upper-flank incision in lateral recumbency and difficulty in suturing the comparatively smaller size of uterus than normal pregnancy (Dutt *et al.*, 2018). Therefore, delivery of mummified fetus through upper left flank approach is often advantageous.

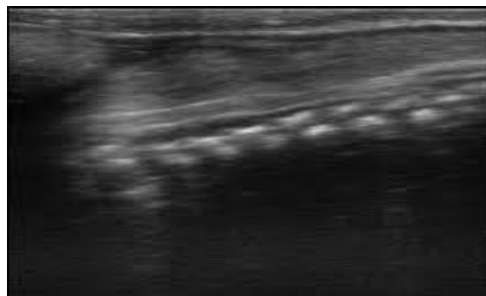
References

- Azizunnesa, Sutradhar BC, Das BC, Hossain MF, Faruk MO (2010). A case study on Mummified Fetus in a heifer. Univ.J. Zool. Rajshahi. Univ. 28: 61-63.
- Barth AD. Induced abortion in cattle. In: Morrow DA, editor. *Current Therapy in Theriogenology*. 2nd ed. Philadelphia: WB Saunders; 1986: 205–208.
- Dutt R, Dalal J, Singh G, Gahalot SC (2018). Management of fetal mummification/ maceration through left flank caesarean section in cows – study of four cases. Adv. Anim. Vet. Sci. 6(1): 12-16.
- Arthur, G.H., Noakes, D.E., & Pearson, H. (1996). *Veterinary Reproduction and Obstetrics*, 7th edition. Elsevier Health Sciences.

- Fubini, S.L., Ducharme, N.G., & Erb, H.N. (1995). Factors associated with postoperative complications following elective celiotomy in dairy cows. *Journal of the American Veterinary Medical Association*, 207(8), 1077-1081.
- Ginther, O.J. (1995). Selection of the dominant follicle in cattle and horses. *Animal Reproduction Science*, 39(1), 67-80.
- Peter, A.T., Vos, P.L.A.M., & Ambrose, D.J. (2014). Postpartum anestrus in dairy cattle. *Theriogenology*, 81(1), 133-144.
- Roberts, S.J., Griner, L.A., & Morgan, E.T. (1986). *Large Animal Internal Medicine*. C.V. Mosby Company.
- Schlafer, D.H., Foster, R.A., & McCauley, C.T. (2000). Female genital system. In: Jubb, K.V.F., Kennedy, P.C., & Palmer, N. (Eds.), *Pathology of Domestic Animals*, 4th edition. Academic Press, pp. 366-367.
- Sloss, V., Dufty, J.H., & Heath, E.J. (1978). Fetal Mummification in a Cow. *Australian Veterinary Journal*, 54(1), 47-48.
- Waldner, C.L., Kennedy, R.I., & Rosengren, L.B. (2001). Factors associated with the risk of mummified fetuses in beef herds in Saskatchewan. *Canadian Veterinary Journal*, 42(12), 943-949.
- Jackson PS, Cooper MJ (1977). The use of cloprostenol for the termination of pregnancy and the expulsion of mummified fetus in cattle. *Vet. Rec.*100:361– 363.
- Katiyar R. Sacchan, S.S.D. Manzoo,r M. Rautela, Pandey, R. N. Prasad, S and Gupta, H.P. 2015. Haematic foetal mummification in a Sahiwal cow: case report. *J. Livestock Sci.* 6:44-46.
- Kumar S, Sharad Kumar, Sharma U, Soodan JS (2013). Induced Vaginal Delivery of Mummified Fetus in a Pleuriparous Crossbred Cow. *Indian Vet. J.* 90 (12): 66 – 67.
- Lefebvre RC, Saint-Hilaire E, Morin I, Couto GB, Francoz D (2009). Retrospective case study of fetal mummification in cows that did not respond to prostaglandin F2 α treatment. *Can. Vet. J.* 50:71–76.
- Roberts SJ (1971). *Veterinary Obstetrics and Genital Diseases (Theriogenology)*. 2nd ed. CBS Publishers and Distributors.India.pp.170-178.
- Tadesse,G. Birhanu, A. Gebrekindan,B. Belete,.S and Khar, S.K. 2015. Bovine Haematic Mummification –New observations-Report of Two Cases in HF Croossbred Cows in Makelle. *Theriogenology Insight*: 5(1): 25-32.
- Surgical Management of Haematic Fetal Mummification by ...



Ultrasound – mummified fetus



Ultrasound – mummified fetus-
Irregular hyperchoic reflections



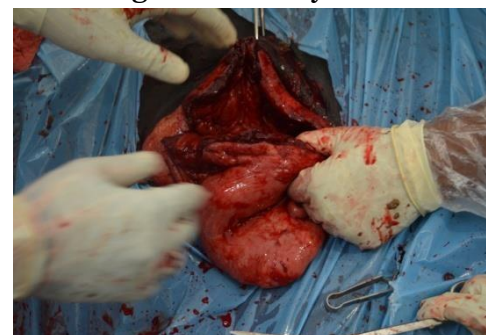
C Section



Removing the mummy



Mummified fetus



Suturing the uterus



Compactly packed Mummified fetus



Animal during discharge

*Received Jan 23, 2020 * Published Feb 2, 2020 * www.ijset.net*