Short communication

DOI: 10.48165/ijar.2024.45.01.21

The Indian Journal of Animal Reproduction

The official journal of the Indian Society
for Study of Animal Reproduction

ACS Publisher
www.acspublisher.com

Year 2024, Volume-45, Issue-1 (June)

ISSN 0970-2997 ***(Print)*** *ISSN 2583-7583* ***(Online)***

Surgical Intervention for Fetal Maceration in a 3.5 month Pregnant Crossbred Cow

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ABSTRACT

This clinical article presents a case report detailing the successful surgical management of fetal maceration in a 3.5-month pregnant crossbred cow using a left caudal paralumbar approach. Fetal maceration was diagnosed based on clinical examination and ultrasound findings. A left caudal paralumbar approach was used under paravertebral anesthesia to minimize disturbance to the surrounding structures and provide access to the uterus. The bony structure of macerated fetus was gently removed. The cow exhibited a prompt recovery, with resumption of normal estrous cycles observed within 65 days post-surgery.

Key words: Fetal maceration, Cattle, Left flank approach.
How to cite: Saini, G., Fernandes, A., Kumar, G., Nehru, D. A., & Bhardwaz, A. (2024). Surgical Intervention for Fetal Maceration in a Pregnant Crossbred Cow.
The Indian Journal of Animal Reproduction, 45(1), 82–84. 10.48165/ijar.2024.45.01.21

INTRODUCTION

Fetal death can result into complete resorption, mummification or maceration depending upon stage of gestation, involution of corpus luteum (CL) and cervical dilatation. Fetal maceration, a condition characterized by the decomposition of the fetus within the dam's uterus due to rapid microbial invasion (Roberts, 1986), can occur at any stage of gestation and has been observed in various species. Regression of CL, uterine inertia, incomplete cervical dilatation, and failure of abortions are prerequisites for fetal maceration. While it is common in cattle and buffaloes, it is rarely encountered in mares, small ruminants, and companion animals. Fetal maceration is frequently observed in animals during the late stages of gestation when dystocia has been overlooked or neglected for a period of 3-10 days (Drost, 2007). The combination of an open cervix and a deceased fetus at body temperature creates favorable conditions for rapid bacterial invasion of the fetus and its surrounding membranes, leading to fetal emphysema and maceration. Cases of fetal maceration in early stages of gestation (during 4-5 months) are rarely reported and

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Received 01-12-2023; Accepted 29-03-2024;

are generally treated with combination of cervical dilators for extracting disintegrating fetal parts per-vaginally. Caesarean section should only be contemplated as a final option in cows to remove the macerated fetus if hormonal treatments prove ineffective. The current study details the approach of managing fetal maceration using caesarean section in a cow.

CASE HISTORY AND OBSERVATIONS

A seven-year-old, three and half month pregnant crossbred cow with a history of reddish-brown, watery, foul-smelling discharge from the vagina persisting for five days was presented to Veterinary Clinical Complex, College of Veterinary Science, Rampura Phul (GADVASU, Ludhiana). Animal was off- feed for three days and significantly decreased milk yield. During per-vaginal examination, a hard one finger dilated cervix was detected. Further, per-rectal examination revealed a contracted uterus positioned completely within the pelvic cavity, having negligible fetal fluid, and featuring a thickened uterine wall. A crepitating mass can be palpated in uterus. The transrectal ultrasonography (Mindray, Vetus 8) was performed, revealing bony pieces (hyperechoic) (Fig.1). Based on these clinical findings, it was diagnosed as a case of fetal maceration.

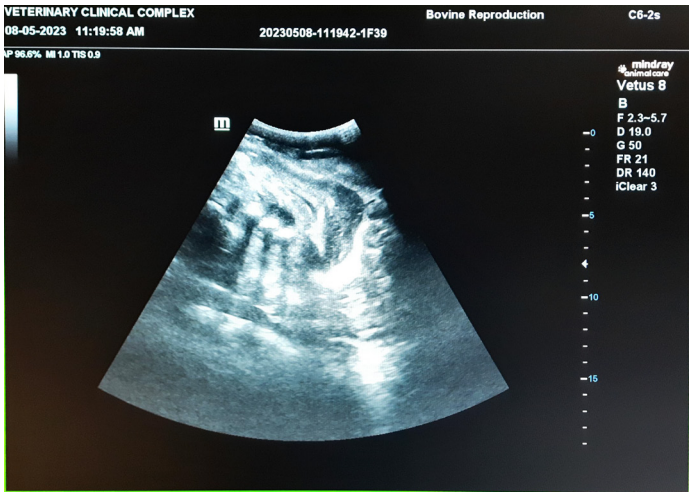

Fig. 1: Hyperechoic disintegrated fetal bony impressions.

TREATMENT AND DISCUSSION

In consultation with owner attempt was made for removing fetal parts per-vaginally after achieving proper cervical dilatation. An attempt was made to dilate the cervix by administration of Cloprostenol sodium (500 µg, IM), Estradiol benzoate (2 mg, IM); Valthamate bromide (80 mg, IM) and intravenous calcium therapy. Additionally, fluid therapy and systemic antibiotics were administered to stabilize and improving general condition of animal. The owner was advised to wait for 48 hours. Despite these medical interventions, there was no improvement in the condition of the birth canal, and attempts to deliver the fetus per-vaginally were unsuccessful due to inadequate cervical dilation. Consequently, laparohysterotomy was performed through the caudal left paralumbar fossa under paravertebral anesthesia (between T13-L1, L1-L2 and L2-L3). After removing fetal bones and decomposed tissues (Figure 2), the uterus was cleansed using normal saline and diluted povidone iodine solution. The uterine closure was achieved with inverting sutures employing Chromic catgut no. 3, followed by the closure of the abdominal incision according to standard procedures. Postoperative care encompassed fluid infusion (Dextrose saline 5% 3lt./day, Metrogyl 1lt./day), antihistaminic (chlorpheniramine maleate @ 0.5 mg/kg IM), NSAIDs (flunixin meglumine 15 ml, IM) and parenteral antibiotics (ceftiofur Na 1g, IM) administered for duration of 5 days, leading to an uncomplicated recovery. The skin sutures were removed 12 days after the surgical procedure. Animal started feeding just after surgery. Ten days post- surgery milk yield increased to 12 lt./day. Animal exhibited estrus 65 days post-surgery and was given sexual rest for one estrus cycle.

Fig. 2: Macerated fetal bones recovered from crossbred cow

Maceration is a phenomenon seen in cattle wherein fetal death triggers bacterial decomposition, leading to situations where either the abortion process is incomplete or the dam faces challenges in expelling the fetus due to uterine inertia and can occur at any stage of gestation once after bones were formed (Long, 2001). Bovine abortions occurring after 3 months of gestation due to unsuccessful or absence of expulsive force leads to fetal retention within the uterus causing fetal emphysema within 24 to 48 hours, with maceration setting in within 3 to 4 days. Fetal maceration is commonly encountered in animals approaching full term, particularly when cases of dystocia have been either disregarded or left unattended for a period ranging from 3 to 10 days (Roberts, 1986). Cases of fetal maceration just after completion of 3rd month of gestation are rarely encountered.

Treatment options for fetal maceration in bovines typically involve the administration of hormones or resorting to laparohysterotomy (Kumar *et al.,* 2013). A combination of prostaglandin, estradiol, and valethamate bromide, which effectively aided in dilating the partly open cervix during the second stage of labor in bovines (Phogat *et al.,* 1994) was also successfully used for cervical dilatation in cases of macerated fetus (Purohit and Gaur, 2011). Instances of hormonal therapy failing to dilate the cervix in cases of fetal maceration, as observed in the current situation, may be attributed to the cervix's hardened and indurated state (Roberts, 1986) or the structure less condition of the macerated fetus.

Considering laparohysterotomy as an alternative treatment, it presents challenges due to a relatively inaccessible small uterus and the risk of unsuccessful removal or contamination of infected uterine contents during the surgical procedure (Roberts, 1986). Different surgical approaches have been suggested by various authors for successful management of fetal maceration (Sood *et al.,* 2009; Purohit, 2012; Dutt *et al.,* 2017). Caudal left paralumbar approach under paravertebral anaesthesia used during present case have been used in past for managing cases of fetal maceration in long standing cases or the cases involving fetal maceration during later stages of gestation (Kumar *et al.,* 2013; Rajkumar *et al.,* 2022).

The feasibility of future breeding for cows with a history of macerated fetuses remains uncertain due to potential severe endometrial damage. Recovery for these cows to become pregnant again after expelling or removing the macerated fetus is unlikely (Long, 2001). In the current case, early surgical intervention following the occurrence of fetal maceration in the first half of pregnancy (115 days of gestation) and prompt intervention after occurrence of first clinical signs (5 days) might have mitigated extensive uterine damage and supported estrus expression post-surgery.

CONCLUSION

The surgical procedure described in present case report can be successfully used for management of fetal maceration occurring during earlier stages of gestation with intra pelvic uterus. Further studies are warranted to explore the long-term reproductive outcomes and refine the surgical technique for wider applicability.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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