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Case report

Management of dystocia complicated by fetal ascites in a Holstein Friesian cow

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ABSTRACT

A five-and-a-half-year-old crossbred Holstein Friesian cow was presented with a history of prolonged second-stage labor. According to the owner, the first water bag had appeared approximately seven hours prior to reporting to the Upazila Veterinary Hospital in Manoharganj, Cumilla, Bangladesh. Upon on-farm examination, a per-vaginal assessment revealed that the fetus was in a posterior presentation, and the fetal abdomen was markedly distended with fluid, giving it a characteristic "pufferfish-like" appearance. Based on clinical findings, a diagnosis of dystocia due to fetal ascites was established. To relieve the obstruction, a guarded fetotomy knife was used to make an incision in the fetal abdominal wall, allowing evacuation of the excessive peritoneal fluid. Following decompression, the non-viable male fetus was successfully delivered via gentle manual traction. The cow was subsequently treated for five days with antibiotics, non-steroidal anti-inflammatory drugs (NSAIDs), and antihistamines. The post-operative recovery was uneventful, and the cow returned to normal physiological status without complications. This case highlights the clinical importance of timely diagnosis and appropriate intervention in managing dystocia associated with fetal ascites in dairy cattle.

Keywords: Bangladesh, dystocia, fetal ascites, fetotomy, Holstein Friesian, manual traction

INTRODUCTION

In Bangladesh, artificial insemination (AI) using semen from high-yielding exotic dairy breeds—particularly Holstein Friesians—is widely practiced to enhance milk production in local and crossbred cows. Currently, over 70% of the national dairy herd undergoes AI with exotic genetics as part of ongoing efforts to improve productivity. While this strategy has contributed significantly to increased milk yield, it has also been associated with a rising incidence of calving-related complications, notably dystocia (Wasef and Islam, 2024).

Dystocia in cattle can result from either maternal or fetal causes. Maternal factors include uterine inertia, inadequate pelvic dimensions, or abnormalities of the birth canal, while fetal causes encompass malposition, fetal oversize, and congenital anomalies. Among high-yielding dairy breeds, fetal causes are more prevalent due to increased birth weights and a higher incidence of developmental abnormalities (Nanda *et al*., 2003). Although relatively rare, fetal dropsical

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conditions, such as hydrocephalus, ascites, hydrothorax, and anasarca, are important contributors to dystocia and often complicate parturition (Purohit *et al*., 2006; Purohit *et al*., 2012). Fetal ascites, in particular, is characterized by the abnormal accumulation of serous fluid within the fetal peritoneal cavity. This may result from a variety of underlying conditions, including hepatic insufficiency, cardiovascular defects causing venous congestion, congenital renal malformations (e.g., polycystic kidneys), or urinary tract obstructions (Jubb *et al*., 1992; Kumar *et al*., 2019). The resultant abdominal distension significantly enlarges fetal size, posing a mechanical barrier to normal delivery and increasing the likelihood of dystocia. Though fetal ascites is infrequently observed across species, it is most commonly reported in bovines (Roberts, 1971). In some cases, ascites has also been linked to fetal mesotheliomas and uterine dropsy (Noakes, 2019; Vermunt and Parkinson, 2019). Given the potential for severe maternal injury, reproductive tract trauma, and economic loss, early identification and timely intervention are essential to reduce morbidity and ensure successful outcomes.

This case report presents the clinical diagnosis and field-based management of dystocia caused by fetal ascites in a Holstein Friesian crossbred cow. It emphasizes practical intervention techniques applicable in rural or resource-limited settings and outlines the effective post-operative care leading to successful recovery.

Case history and clinical observation

A five-and-a-half-year-old Holstein Friesian dairy cow, weighing approximately 200 kg and in its third gestation, with no prior history of abortion or stillbirth, was referred to the Upazila Veterinary Hospital in Manoharganj, Cumilla. The owner reported that the cow had been straining persistently for the past seven hours. The rupture of the first water bag occurred three hours before the cow was brought to the hospital. Prior to referral, the local artificial insemination technician attempted manual delivery, which was unsuccessful. On clinical examination, the cow was alert but exhibited pale pink mucous membranes, indicative of mild anemia or circulatory stress, and a rectal temperature of 101°F (38.3°C), within the normal physiological range. Per-vaginal examination revealed a fully dilated and relaxed cervix. The fetus was found in a posterior longitudinal presentation with a dorso-sacral position; both hind limbs were extended into the birth canal, accompanied by severe maternal straining. Palpation confirmed that the fetal pelvis was engaged in the birth canal. Remarkably, the fetal abdomen was markedly distended and fluid-filled, creating a "pufferfish-like" appearance due to severe abdominal swelling. Based on these findings, a diagnosis of dystocia secondary to fetal ascites (hydroperitoneum fetus) was made.

Figure 1 Stepwise management of dystocia due to fetal ascites in a Holstein Friesian cow; A: incision made on the fetal abdominal wall using a guarded fetotomy knife; B: evacuation of ascitic fluid from the fetal peritoneal cavity; C: gentle manual traction applied to deliver the fetus; D: complete removal of the non-viable male fetus exhibiting marked abdominal distension due to ascites.

Treatment

To facilitate fetal delivery, epidural anesthesia was administered using 10 mL of 2% lignocaine hydrochloride (G-Lidocaine, Gonoshasthaya, Bangladesh). After adequate analgesia was achieved, a guarded fetotomy knife was carefully introduced into the uterus via

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the birth canal. An incision was made on the fetal lower abdominal wall (Figure 1A), releasing approximately 9-10 liters of straw-colored, pigmented fluid from the fetal peritoneal cavity (Figure 1B). Following decompression, the fetus contracted sufficiently to allow for a smooth delivery. The dead male calf was extracted successfully by applying gentle traction on both hind limbs (Figure 1C and 1D). The cow stood up immediately after calving, indicating a rapid recovery from the dystocia.

Post-operative management

Following the successful delivery of the ascitic fetus, the cow was subjected to a comprehensive post-operative therapeutic regimen aimed at promoting recovery and preventing secondary infections. Intramuscular administration of Amoxicillin (2 g/day; Moxilin Vet, Acme, Bangladesh) was given for five consecutive days to provide broad-spectrum antibacterial coverage. To manage inflammation and alleviate pain, Meloxicam (10 mL/day; Camlox, Popular, Bangladesh), a non-steroidal anti-inflammatory drug (NSAID), was also administered intramuscularly for five days.

In addition, Diphenhydramine hydrochloride (10 mL/day; Phenadryl Vet, Acme, Bangladesh) was administered intramuscularly for five days to counter potential hypersensitivity reactions and support systemic recovery. A vitamin B-complex preparation (20 mL; V-Plex, Acme, Bangladesh) was administered intramuscularly on alternate days for a total of three doses to enhance metabolic and neuromuscular function during convalescence. Immediately after calving, intrauterine administration of Metronidazole (Diro Vet, Acme, Bangladesh) was performed to reduce the risk of secondary bacterial contamination within the uterus, especially given the invasive nature of the fetal abdominal decompression procedure. Supportive therapy continued for five days, after which the cow demonstrated a smooth and uneventful recovery, regaining normal physiological function and behavior without any signs of postpartum complications.

DISCUSSION

Fetal ascites is an uncommon but clinically significant cause of dystocia in cattle, with several cases documented across different regions worldwide (Kumaresan *et al*., 2013; Ravikumar *et al*., 2013; Wasef and Islam, 2024). The condition is characterized by the pathological accumulation of serous fluid within the fetal peritoneal cavity, often resulting from underlying congenital or developmental abnormalities. This excessive intra-abdominal fluid leads to considerable distension of the fetal abdomen, significantly increasing the overall size and compromising the fetus's ability to pass through the birth canal. Consequently, such cases frequently present as mechanical dystocia, particularly when the fetus assumes a posterior longitudinal presentation.

In the current case, the fetus exhibited a markedly distended abdomen with a "pufferfish-like" appearance, a term often used to describe the grossly swollen fetal contour associated with advanced ascitic conditions. This presentation served as a clear clinical indicator of severe fetal ascites. Despite full cervical dilation and visible hindlimbs in the birth canal, manual traction alone proved ineffective, as the enlarged abdomen created a physical blockage that prevented successful delivery. Previous reports have noted that vaginal delivery of ascitic fetuses is possible, particularly when early and appropriate obstetrical interventions—such as fetal abdominal decompression—are employed (Kumaresan *et al*., 2013; Sathya *et al*., 2018). The present case supports these findings and reinforces the importance of accurate diagnosis and timely field-level intervention in managing such rare yet challenging cases of fetal dystocia. The use of a guarded fetotomy knife to create an incision in the fetal abdominal wall and evacuate the accumulated ascitic fluid proved to be a practical, safe, and effective approach for resolving dystocia in this case. This method allowed for significant decompression of the fetal abdomen, thereby reducing its size and enabling successful vaginal delivery via gentle manual traction. Compared to cesarean section,

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which, although effective, is associated with higher operational costs, increased risk of postoperative complications, and potential negative effects on future fertility in breeding animals, this technique offers a less invasive and more field-adaptable alternative (Barkema *et al*., 1992). Moreover, in rural or resource-limited settings, surgical intervention may be impractical due to lack of facilities, sterile conditions, anesthesia, or trained personnel. In such circumstances, controlled abdominal decompression offers an accessible and cost-effective solution for managing obstructive fetal dystocia.

The pathogenesis of fetal ascites is complex and multifactorial. It may result from a variety of congenital or acquired fetal abnormalities, including impaired lymphatic drainage, hepatic insufficiency, cardiovascular defects leading to venous congestion, urinary tract obstruction, or congenital renal anomalies such as polycystic kidneys (Jubb *et al*,, 1992). Obstruction of lymphatic circulation is thought to be a common underlying mechanism, which leads to accumulation of serous fluid in the peritoneal cavity. Additionally, reduced fetal urine output due to urinary tract malformations can further contribute to fluid retention. In rare cases, ascites may also be linked to intra-abdominal neoplasms such as mesotheliomas, or associated with generalized fetal dropsy. When fetal ascites is present, the distended abdomen becomes a significant mechanical obstacle to delivery. Without decompression, spontaneous or assisted vaginal delivery is nearly impossible. In the present case, drainage of approximately 9-10 liters of straw-colored peritoneal fluid effectively reduced fetal volume and permitted successful extraction. This finding is consistent with previous reports that emphasize the critical role of fetal abdominal decompression in the management of ascitic dystocia (Katiyar *et al*., 2016).

Overall, this case highlights the importance of early recognition of abnormal fetal presentations and prompt, targeted obstetrical intervention. Timely decompression, combined with appropriate follow-up care, not only preserves the reproductive performance of the dam but also minimizes the economic impact on the producer. It reinforces the value of simple yet effective field techniques in the successful management of complex calving situations in bovine practice.

CONCLUSION

This case demonstrates that dystocia due to fetal ascites can be effectively managed through timely fetal abdominal decompression using a guarded fetotomy knife, followed by manual extraction. This technique provides a practical, less invasive alternative to cesarean section, especially in field conditions with limited surgical resources. Combined with appropriate postoperative care, including antibiotics, anti-inflammatories, and supportive therapy, the dam recovered uneventfully. Early diagnosis and prompt intervention are key to ensuring favorable outcomes and minimizing economic losses. This case underscores the importance of field-ready techniques in managing complex parturition cases in bovine practice.

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AUTHORS' CONTRIBUTIONS

Al Wasef A(AA), Md. Farhad Hossan MFH), Hafsa Hossain (HH), Md. Rashedul Islam (MRI), Uday Kumar Mohanta (UKM).

AA managed the fetal ascites, wrote the manuscript, and edited the manuscript. MFH and HH wrote the manuscript. MRI reviewed the manuscript. UKM supervised and reviewed the manuscript. All authors checked and confirmed the last edition of the submitted manuscript.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest associated with the publication of this case report.

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