

MANAGEMENT OF DYSTOCIA IN A RECUMBENT CROSSBRED HOLSTEIN FRIESIAN HEIFER: A CASE REPORT ON INDUCTION OF PARTURITION AND EPISIOTOMY FOR VULVAR STENOSIS

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Abstract: This case report describes the successful management of dystocia in a three-year-old recumbent crossbred Holstein Friesian primiparous (heifer) at 276 days of gestation. The animal presented with a seven-day history of recumbency secondary to hypocalcaemia and Theileria infection. To preserve the viability of the fetus, a medical induction protocol was initiated using a combination of prostaglandin F2 α , estradiol benzoate, and dexamethasone. Parturition commenced 48 hours post-induction. Dystocia was diagnosed due to a combination of fetal factors (anterior presentation, right iliac position, and unilateral carpal flexion) and maternal factors (severe vulvar stenosis). Correction of fetal posture was followed by a dorsolateral episiotomy, allowing the delivery of a live male calf. This case highlights the importance of a comprehensive approach to dystocia in critically ill recumbent animals, integrating medical and surgical interventions to achieve a successful outcome for both dam and offspring.

Keywords: Bovine, Dystocia, Recumbency, Episiotomy, Vulvar Stenosis, Induction of Parturition, Theileria.

Introduction

Bovine dystocia is a significant cause of economic loss and can be classified into maternal, fetal, or combined origins. Maternal causes often involve constriction or obstruction of the birth canal, which can exhaust the dam's expulsive forces (Srinivas *et al.*, 2007). Vulvar and vestibular stenosis, while uncommon, is a recognized cause of dystocia in primiparous heifers. This condition is frequently associated with genital hypoplasia stemming from chronic illness or suboptimal nutrition during development, preventing adequate relaxation and dilation of the vulva at parturition (Mohan *et al.*, 2018). When manual dilation is impossible or time is critical, an episiotomy performed under local or epidural anaesthesia is the indicated surgical intervention to enlarge the vulvar opening and facilitate delivery (Roberts, 1986). This report details the diagnosis and successful multidisciplinary management of complex dystocia in a

critically ill, recumbent heifer. Stenosis of the vulva decide and vestibule may be the result of immaturity or may be a heritable defect in some breeds (Youngquist and Threlfall, 2007). A dorso-lateral episiotomy may be performed more easily while the dam is recumbent (Mee, 2008)

Case History and Clinical Findings

A three-year-old crossbred Holstein Friesian primiparous heifer at 276 days of gestation was presented for acute recumbency and anorexia (Figure 1). Initial clinical examination revealed a depressed animal with a normal temperature (101.5°F), heart rate (70 bpm), and respiratory rate (30/min). Mucous membranes were pink and moist. The animal was completely unable to rise despite owner efforts, leading to the development of decubital ulcers and splayed hind limbs over seven days. Haematological and biochemical analysis revealed marked hypocalcaemia (5.55 mg/dL; reference range: 8.5-10.5 mg/dL) and a blood smear positive for *Theileria spp.* Parasites and necessary treatment were given. Liver enzymes were moderately elevated (AST: 407 IU/L). Transrectal palpation confirmed a live, viable fetus. Due to the dam's deteriorating condition and poor prognosis for recovery from recumbency, the decision was made to medically induce parturition on day 276 of gestation to salvage the calf.

Treatment and Discussion

Initial supportive therapy included intravenous fluid administration (5% Dextrose in normal saline, Ringer's lactate, and 0.9% sodium chloride), meloxicam (0.3 mg/kg IV), and a vitamin B complex supplement. A combination induction protocol was administered intramuscularly, consisting of 500 µg cloprostenol sodium (a prostaglandin F2α analogue), 2 mL estradiol benzoate, and 20 mg dexamethasone. Forty-eight hours post-induction, the dam exhibited abdominal straining and tenacious vaginal discharge. A per-vaginal examination revealed a fetus in anterior presentation with a right iliac position and flexion of the left carpal joint. Severe vulvar stenosis were identified as the primary maternal factor obstructing delivery (Figure 2). After manual correction of the fetal posture, attempted traction was impeded by the rigid vulvar structures. Due to vulvar stenosis and the dam's recumbency, difficulty was encountered in extracting the fetus. A dorsolateral episiotomy was therefore performed at the 10 o'clock position under strict aseptic conditions (Figure 3). The vulva was infiltrated with 2% lidocaine hydrochloride and surgically prepared with povidone-iodine. A 2–3 cm incision was made, and the constricting dorsal commissure of vulva was transected. This provided sufficient space for the application of obstetrical snares placed proximal to the fetlock and pastern joints of the forelimbs and a Benesch's knot was applied behind the occiput to facilitate

delivery. A live male calf was successfully delivered. The episiotomy was closed in two layers: the vestibular mucosa was apposed using size-2 chromic catgut in a simple continuous pattern, and the skin was closed with a horizontal mattress pattern (Figure 4).

A viable, near-term fetus was successfully delivered in a critical dam via medical induction. This approach addressed a complex dystocia caused by fetal malposture and maternal birth canal anomalies, while managing the dam's grave systemic state.

The congenital vulvar stenosis presented a complete physical barrier to vaginal delivery (Jackson, 2004). As vulvar stenosis is a well-documented though infrequent cause of dystocia in heifers that often necessitates surgical intervention, an episiotomy was indicated to avoid a severe, uncontrolled vulvar tear (Kumar *et al.*, 2014; Dalal *et al.*, 2016; Mohan *et al.*, 2018; Abdul *et al.*, 2024). A dorsolateral approach was selected for the episiotomy to circumvent the significant vascular supply of the ventral commissure, a standard technique recommended to provide adequate delivery space while minimizing the risks of significant hemorrhage, surgical site contamination, and subsequent wound dehiscence (Noakes *et al.*, 2019). Incomplete dilatation of vulva is more common in primiparous animals whereas, incomplete dilatation of cervix more common in pluriparous cows (Mee, 2008). The obstetrical snares were placed proximal to the fetlock and behind the ears to distribute traction forces evenly and minimize fetal injury during extraction.

Conclusion

This case highlights that even in seemingly hopeless situations of maternal recumbency near term, a positive outcome is achievable. It stresses the importance of thorough clinical and laboratory evaluations to identify all contributing factors, timely decision-making to induce parturition when the dam's prognosis is poor, proficiency in obstetrical maneuvers and surgical techniques like episiotomy, and a comprehensive approach addressing both fetal presentation and maternal birth canal constraints.

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Figure. 1 Animal in sternal recumbency due to hypocalcemia induced prolonged recumbency

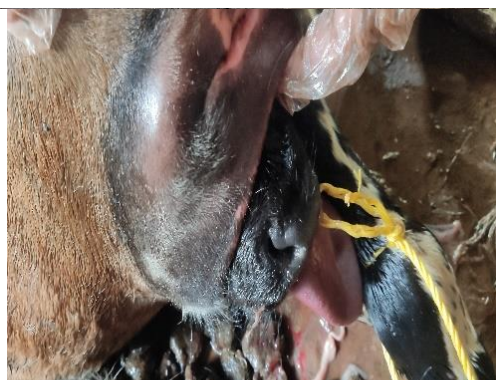


Figure. 2 Vulvar stenosis with fetal head and limb impaction, causing dystocia

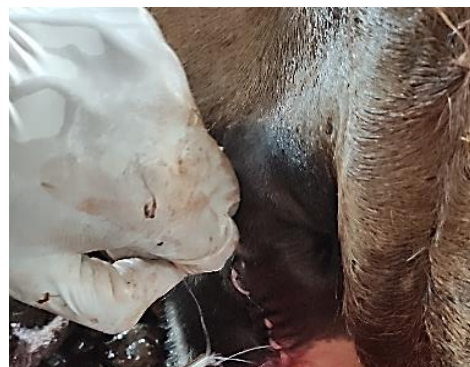


Figure. 3 Apposition of dorsal vulva after episiotomy



Figure. 4 Dorsal vulval commissure apposed post-episiotomy