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Successful obstetrical management of fetal carpal flexion causing dystocia in a cow: A case report

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ABSTRACT

Dystocia is an important reproductive emergency in cattle and may result in substantial fetal and maternal morbidity and mortality when timely obstetrical intervention is not undertaken. Fetal maldisposition, particularly abnormal posture of the limbs, is an important cause of dystocia and may prevent normal passage of the fetus through the maternal birth canal. The present case describes the successful management of dystocia associated with unilateral carpal flexion in an eight-year-old non-descript cow. The cow was presented with non-progressive labor and protrusion of a single fetal limb through the vulva. Obstetrical examination revealed a live fetus in anterior longitudinal presentation and dorsal position with flexion of the left carpal joint. Following low epidural anesthesia with 2% lignocaine, manual obstetrical correction was performed. The flexed limb was carefully extended by controlled manipulation, following which coordinated traction was applied during maternal abdominal contractions. A viable male calf was successfully delivered. Postpartum management included intrauterine antimicrobial therapy, calcium supplementation, oxytocin and analgesic administration. No apparent postpartum complications were observed. This case highlights the importance of early obstetrical examination, accurate identification of fetal posture and appropriate manual correction before attempting traction. Timely correction of a simple fetal postural abnormality can facilitate successful vaginal delivery and may avoid more invasive obstetrical procedures.

Keywords: Bovine, Dystocia, Fetal maldisposition, Carpal flexion, Obstetrical maneuver, Manual correction, Calf extraction

1. Introduction

Dystocia, derived from the Greek words dys (difficult) and tokos (birth), refers to difficult or abnormal parturition requiring obstetrical assistance. It remains one of the major reproductive emergencies encountered in cattle and is associated with increased risks of fetal mortality, maternal trauma, retained fetal membranes and postpartum reproductive complications. The economic consequences may be particularly important in small-holder production systems where individual animals contribute substantially to household income and food security.

Dystocia in cattle may originate from maternal or fetal factors. Fetal causes include abnormalities of presentation, position and posture, fetopelvic disproportion, fetal malformations, multiple fetuses, fetal death and emphysematous changes. Among these, abnormal fetal disposition is an important and potentially correctable cause of difficult birth.

In obstetrical terminology, presentation describes the relationship between the longitudinal axis of the fetus and the maternal birth canal, whereas position refers to the relationship between the fetal dorsum and the maternal pelvic canal. Posture describes the disposition of the movable fetal appendages, particularly the head and limbs. A fetus may therefore have a normal presentation and position but still be unable to pass through the birth canal because of an abnormal posture such as carpal flexion.

Correction of fetal maldisposition is generally attempted through appropriate manual techniques, including repulsion, rotation, version and extension. When correction is achieved early and the fetus remains viable, manual obstetrical intervention may permit vaginal delivery and avoid more invasive procedures such as fetotomy or caesarean section.

The present report describes the clinical diagnosis and successful nonsurgical management of dystocia caused by unilateral carpal flexion in a cow, emphasizing the importance of systematic obstetrical examination and correction of fetal posture before traction is attempted.

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2. Case history and clinical examination

An eight-year-old non-descript cow, reported to be in its sixth parity, was presented with a history of non-progressive labor and protrusion of a single fetal limb through the vulva. According to the owner, the animal had been observed with signs of parturition earlier on the day of presentation. The animal had conceived following natural service. Clinical examination revealed active uterine contractions and signs consistent with a viable fetus. Obstetrical examination through the birth canal revealed an anterior longitudinal fetal presentation with dorsal position and abnormal posture of the left thoracic limb due to carpal flexion. One fetal limb was externally visible, whereas the corresponding limb was not adequately extended into the birth canal. The findings established fetal maldisposition due to unilateral carpal flexion as the primary cause of dystocia. The presence of fetal reflexes indicated fetal viability and supported an attempt at correction and vaginal delivery rather than immediate destructive or surgical intervention.

3. Obstetrical management

3.1 Epidural anesthesia

To facilitate obstetrical manipulation and minimize straining during correction, low caudal epidural anesthesia was performed. Three millilitres of 2% lignocaine hydrochloride was administered at the first intercocygeal space. The technique was intended to provide adequate analgesia and reduction of straining while preserving motor function of the pelvic limbs.

3.2 Correction of fetal posture

Following adequate desensitization, the cow was prepared for manual obstetrical intervention. A gloved and adequately lubricated hand was introduced into the birth canal and the fetal limbs were carefully assessed.

The flexed left carpal joint was identified by palpation. The fetal hoof was carefully grasped, and controlled manipulation was used to extend the flexed limb toward the pelvic canal and external genital opening. The maneuver was performed gradually to minimize trauma to both the fetus and the maternal reproductive tract.

Once the left thoracic limb had been successfully extended and the abnormal posture corrected, both fetal limbs were positioned appropriately within the birth canal. Coordinated traction was then applied to the fetal limbs in synchronization with the cow's abdominal contractions. A viable male calf was successfully delivered vaginally.

4. Postpartum management

Following delivery, supportive postpartum management was instituted. The cow received four intrauterine tetracycline boluses and oral calcium supplementation in the form of Ascal® gel. Oxytocin (10 IU) was administered slowly intravenously to promote uterine contraction and facilitate expulsion of the fetal membranes. Flunixin meglumine hydrochloride at 2.2 mg/kg intramuscularly was administered for analgesic and anti-inflammatory support.

No postpartum retention of fetal membranes or apparent reproductive tract infection was reported following the intervention.

5. Discussion

Dystocia represents a clinically important reproductive emergency in cattle because prolonged or unsuccessful parturition can compromise both fetal viability and maternal health. Delayed correction may increase the likelihood of fetal hypoxia, fetal death, trauma to the birth canal, uterine injury and subsequent reproductive complications. The economic impact can be considerable, particularly in production systems where cattle constitute an important component of household livelihood.

The reported incidence of dystocia in dairy cattle varies considerably among populations, with differences attributable to breed, management, parity, fetal characteristics, nutrition and environmental condi-

tions. Mee (2008) [1] reported a prevalence ranging from approximately 2–22%, while assisted calving may occur at substantially higher frequencies in some dairy populations. In Karan Fries cattle, an incidence of 3.84% has been reported by Balasundaram *et al.* (2011) [2].

The etiology of dystocia is multifactorial. Factors influencing its occurrence include direct obstetrical causes, phenotypic characteristics of the dam and fetus, environmental and management factors, and genetic influences. Important factors include fetal birth weight, fetal sex, gestation length, cow age and parity, body weight, body condition, pelvic dimensions, nutritional status and abnormalities of fetal presentation or posture.

From an obstetrical perspective, the present case is particularly relevant because the fetus had a normal anterior longitudinal presentation and dorsal position but an abnormal unilateral carpal posture. Thus, the primary obstruction was not caused by an abnormal orientation of the entire fetus but by failure of one thoracic limb to extend normally into the birth canal.

Purohit *et al.* (2006) [3] reported that head deviation and limb flexions represented important fetal causes of dystocia in cattle and buffaloes. In cattle, limb flexion accounted for 19.4% of fetal causes in their retrospective analysis, emphasizing the clinical relevance of fetal limb abnormalities.

A critical feature in the management of fetal postural abnormalities is accurate diagnosis before traction. Blind or forceful traction on an incompletely extended fetus can increase the risk of maternal soft-tissue trauma and fetal injury. In the present case, palpation of the birth canal allowed identification of the flexed carpal joint before traction was attempted. Controlled extension of the limb restored a more appropriate fetal posture, permitting subsequent coordinated traction and successful vaginal delivery.

The favorable outcome in this case also emphasizes the importance of early intervention. When the fetus is alive and the abnormality is mechanically correctable, manual obstetrical correction may provide a relatively straightforward alternative to more invasive procedures. Mutation techniques such as repulsion and extension are particularly useful when sufficient space is available within the uterus and pelvic canal.

The use of caudal epidural anesthesia facilitated the obstetrical procedure by reducing discomfort and straining. Appropriate anesthesia can improve operator access and permit more controlled manipulation, thereby potentially reducing unnecessary trauma during correction.

Following delivery, oxytocin was administered to support uterine contraction and fetal membrane expulsion. The original case report documented the absence of apparent postpartum complications such as retained fetal membranes or infection.

Overall, the case demonstrates that fetal carpal flexion, although capable of producing complete obstruction of the birth canal, can be successfully managed through timely diagnosis and controlled manual correction when the fetus is viable and the maternal birth canal is adequate.

6. Clinical significance

- Fetal viability should be assessed before attempting definitive obstetrical intervention.
- Presentation, position and posture should be systematically determined during vaginal examination.
- When only one fetal limb is visible, the possibility of flexion of the contralateral limb should be considered.
- The abnormal posture should be corrected before traction is applied.
- Traction should be controlled and coordinated with maternal contractions after satisfactory correction.
- More invasive procedures should be considered when manual correction is unsuccessful or when maternal or fetal conditions preclude safe vaginal delivery.

7. Conclusion

Unilateral fetal carpal flexion is a potentially correctable cause of dystocia in cattle. In the present case, careful obstetrical examination identified carpal flexion as the mechanical cause of dystocia despite an otherwise favorable fetal presentation and position. Low epidural anesthesia followed by controlled manual extension of the affected limb successfully corrected the postural abnormality and permitted extraction of a viable male calf.

The case emphasizes that early recognition, precise obstetrical diagnosis and appropriate correction of fetal posture are central to successful management of dystocia. Before resorting to traction or invasive obstetrical procedures, veterinarians should assess whether the obstruction can be safely corrected through appropriate mutation techniques. Timely intervention in appropriately selected cases can improve fetal survival while reducing maternal complications and the need for surgical intervention.

Figure legends



Figure 1. External visualization of a single fetal limb during dystocia, with the second limb not visible.

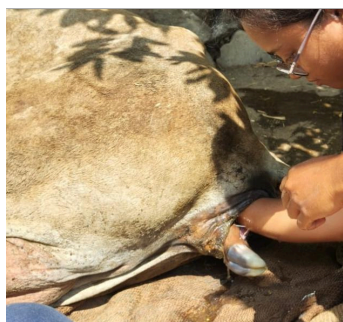


Figure 2. Manual obstetrical manipulation and extension of the flexed fetal carpal joint



Figure 3. Application of controlled manual traction following correction of the fetal postural abnormality.



Figure 4. Successful vaginal extraction of a viable male calf.

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