



# Management of Uterine Prolapse in a Crossbred Holstein Cow: A Case Report

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**Abstract.** Uterine prolapse is a critical postpartum emergency in cattle that demands immediate intervention, since the everted mass is highly vulnerable to trauma, contamination, and haemorrhage, and any delay in repositioning markedly worsens the prognosis. This report describes the diagnosis and successful management of a complete uterine prolapse in a five-year-old crossbred Holstein cow presented eight hours after her fourth calving. On examination, a large, oedematous, dark-red mass with visible caruncles protruded from the vulva, accompanied by intense straining, systemic weakness, and cold extremities, confirming a diagnosis of uterine prolapse. The animal was restrained and caudal epidural anaesthesia was administered at the first sacrococcygeal interspace (S5-Co1) to abolish straining and permit manipulation of the mass. Because the prolapsed tissue carried several lacerations with active bleeding points, the case was classified as complicated; all bleeding points were sutured with chromic catgut (2-0), the mass was cleansed with a potassium permanganate solution, manually repositioned into the pelvic cavity, and the vulva was closed with a modified Buhner-type suture using sterile infusion-set tubing as the retention material. Postoperatively, the cow received five days of supportive therapy comprising intravenous fluids, a non-steroidal anti-inflammatory drug, an antihistamine, a broad-spectrum antibiotic, calcium borogluconate, and vitamin B-complex. Recovery was uneventful, the retention suture was removed after one week, and no recurrence was observed over a two-month follow-up period. This outcome confirms that prompt epidural anaesthesia, careful haemostasis, and infusion-tubing vulval retention together allow a favourable prognosis even in a complicated presentation of bovine uterine prolapse.

**Keywords:** Uterine Prolapse; Crossbred Holstein Cow; Epidural Anaesthesia; Buhner's Technique; Postpartum Complication

## 1. Introduction

Within agricultural economies, cattle remain one of the most important classes of large ruminant livestock kept by smallholder farmers because of their high overall productivity, ease of maintenance, and reproductive rate (Cahyani & Nurdin, 2024). In Afghanistan, roughly three-quarters of the population lives in rural areas and depends on farming and animal husbandry for daily subsistence; nomadic communities such as the Kochi rely almost entirely on livestock for their income, and the national cattle population is estimated at 3.7 million head, supplying both meat and milk (Haidary & Radzi, 2024). Cows are nonetheless prone to a range of periparturient reproductive disorders including genital prolapse, retained foetal membranes, dystocia, abortion, and premature birth all of which translate into direct economic losses for farmers through reduced income and treatment costs (Asri, 2017; Srivastava & Pande, 2018).

Uterine prolapse is typically seen in recently calved females and is described clinically as a large, feed-sack-like mass in contact with the ground, its surface studded with dark purple caruncles; this appearance, together with a distinct pathogenesis, sets it apart from cervico-vaginal prolapse (Dorn, 2023). Most cases develop within 6–12 hours of calving, although prolapse occurring several days later has also been reported and can complicate replacement (Anderson & Miesner, 2008). Vaginal and uterine prolapse are the two prolapse types most frequently encountered in the bovine reproductive tract; crossbred cows are particularly prone to vaginal prolapse during the final trimester of pregnancy (Hasan et al., 2017), whereas uterine prolapse is comparatively uncommon, with reported prevalence ranging from about 0.2% (Odegaard, 1977) to 0.6% of calvings (Carluccio et al., 2020), figures broadly consistent with subsequent regional surveys (Purohit et al., 2018).

The precise pathophysiology of genital prolapse remains incompletely understood, although several predisposing factors have repeatedly been implicated, including hypocalcaemia, forceful traction during delivery, and prolonged or difficult calving (Miesner & Anderson, 2008; Smith et al., 2020). Both severe and moderate hypocalcaemia have been documented significantly more often in cows with uterine prolapse than in unaffected herd-mates, supporting a causal role for impaired myometrial tone (Risco et al., 1984). Increased intra-abdominal pressure, obesity, and prolonged tenesmus have also been proposed as contributing mechanisms (Jena et al., 2013), while diets rich in oestrogenic compounds such as clover pasture, soybean meal, mouldy maize, and barley have been associated with a higher incidence of genital prolapse, presumably through relaxation of the pelvic ligaments and perineal musculature (Bhattacharyya et al., 2012). Parity is also an important risk factor: repeated pregnancies and deliveries progressively weaken the ligamentous and muscular support of the uterus, so pluriparous cows are disproportionately affected relative to primiparous animals (Borsberry & Dobson, 1989; Murphy & Dobson, 2002). Left uncorrected, prolapse can compromise future fertility and, in a proportion of cases, prove fatal, which is why the condition is regarded as a genuine veterinary emergency (Roberts, 1986). This report documents the effective management of a complicated case of uterine prolapse in a crossbred Holstein cow following calving, with the aim of illustrating a practical, field-applicable approach relevant to veterinary practice in Afghanistan.

## 2. Methods

### 2.1. Animal

A five-year-old crossbred Holstein cow, which had calved four times, was brought to the veterinary clinic with a large mass in contact with the ground and purple lumps visible on its surface. The uterine prolapse was recorded to have occurred approximately 8 hours after calving.

### 2.2. Clinical Sign

A uterine protrusion from the vulva was evident, causing the animal significant discomfort. A large, red, exposed mass with visible dark-red caruncles was observed, together with intense straining and swelling resulting from continuous pushing a presentation consistent with the classical clinical picture of uterine prolapse described in standard reproduction references (Noakes et al., 2001; Merck Veterinary Manual, 2024). Signs of intense

abdominal discomfort accompanied by bleeding were also present, along with systemic signs including weakness, depression, and cold ears.

### 2.3. Diagnosis

Based on the clinical signs observed, the animal was diagnosed with uterine prolapse the cow's uterus protruding at the vulva (Figure 1a).

### 2.4. Treatment

A potassium permanganate solution (1:1000) was used to cleanse the prolapsed mass and remove dead tissue, debris, and dirt particles. Caudal epidural anaesthesia (2% lidocaine, 0.22 mg/kg) was administered at the first intercoccygeal space (S5-Co1) to desensitise the tail, anus, perineum, vulva, and vagina, a technique and dosage consistent with established recommendations for large-animal epidural analgesia (Hall et al., 2001; Ismail, 2016). The mass was managed manually, and all laceration bleeding points were closed using synthetic absorbable suture (chromic No. 2-0) (Figure 1c). To facilitate reduction and easier access to the abdominal cavity, the attending clinicians' hands were immersed in ice-cold water before repositioning the uterus, which was then lubricated with sterile Vaseline and returned to its normal anatomical position.

To prevent recurrence of the prolapse, a modified Buhner-type retention suture was placed using sterile infusion-set tubing as the suture material once all uterine tissue had been fully repositioned (Figure 1d) an approach reported to minimise recurrence and vulvar disfigurement compared with conventional suture materials (Bhattacharyya et al., 2012; Selvaraju et al., 2023; Kumbhar et al., 2009). To address bleeding, sepsis, and swelling, and to prevent shock, the postoperative regimen summarised in Table 1 was administered.

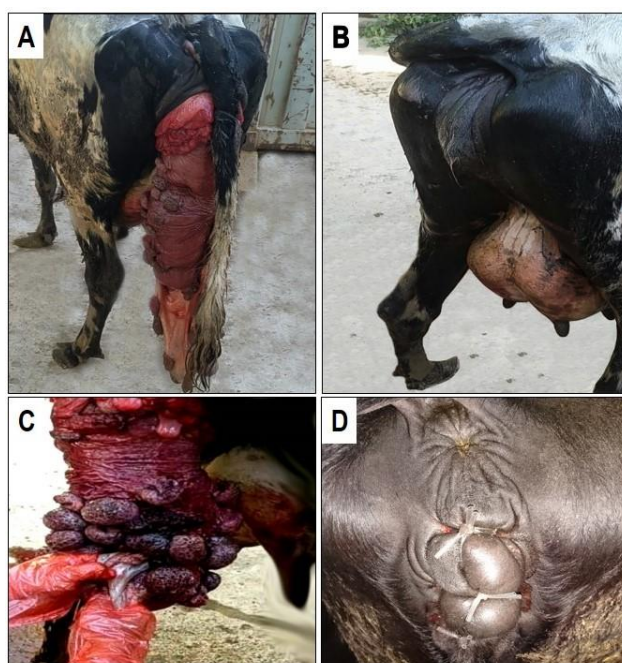


Figure 1. (a) The prolapsed mass, with the cow's uterus hanging out at the vulva. (b) Two months after treatment, showing successful repositioning. (c) Cleaning of the prolapsed mass and surrounding area with an antiseptic solution. (d) Sutured vulva using an infusion pipe.

| <b>Table 1.</b> Postoperative supportive therapy administered to the affected cow. |             |              |                                            |
|------------------------------------------------------------------------------------|-------------|--------------|--------------------------------------------|
| <b>Therapeutic agent</b>                                                           | <b>Dose</b> | <b>Route</b> | <b>Purpose / duration</b>                  |
| 5% Dextrose                                                                        | 1 L         | IV           | Fluid/energy support, single dose          |
| Ringer's lactate                                                                   | 1 L         | IV           | Fluid and electrolyte support, single dose |
| Flunixin meglumine (NSAID)                                                         | 2.2 mg/kg   | IV           | Anti-inflammatory / analgesic              |
| Pheniramine maleate                                                                | 10 mL       | IM           | Antihistamine, anti-shock                  |
| Enrofloxacin                                                                       | 3.5 mg/kg   | IM           | Broad-spectrum antibiotic, 5 days          |
| Vitamin B-complex                                                                  | 15 mL       | IM           | Supportive therapy, 5 days                 |
| Calcium borogluconate (25%)                                                        | 250 mL      | IV           | Correction of hypocalcaemia                |
| Haemostatic agent                                                                  | 10 mL       | IV           | Control of haemorrhage                     |

Following one week of postoperative care, the cow was in stable condition and the retention sutures were removed. The suture wound was cleaned with povidone-iodine, and the owner was advised to apply antiseptic ointment regularly. Appropriate follow-up and communication with the client were maintained for two months (Figure 1b).

### 3. Results and Discussion

The affected cow presented with a complete postpartum uterine prolapse approximately eight hours after its fourth calving. Clinical examination revealed a large, edematous, dark-red uterine mass protruding through the vulva, with prominent caruncles, multiple superficial lacerations, and active hemorrhage. The prolapsed uterus was contaminated with soil and bedding material, and the cow exhibited continuous abdominal straining, weakness, depression, and cold extremities, indicating a compromised general condition (Table 2). Based on these clinical findings, the case was diagnosed as a complicated complete uterine prolapse requiring immediate intervention.

| <b>Table 2.</b> Clinical findings at presentation of the affected crossbred Holstein cow. |                                      |
|-------------------------------------------------------------------------------------------|--------------------------------------|
| <b>Clinical parameter</b>                                                                 | <b>Observation</b>                   |
| Species                                                                                   | Bovine                               |
| Breed                                                                                     | Crossbred Holstein                   |
| Age                                                                                       | 5 years                              |
| Parity                                                                                    | Fourth calving                       |
| Time after calving                                                                        | Approximately 8 hours                |
| General condition                                                                         | Weak and depressed                   |
| Appetite                                                                                  | Reduced                              |
| Continuous straining                                                                      | Present                              |
| Uterine prolapse                                                                          | Complete postpartum uterine prolapse |

|                      |                                                 |
|----------------------|-------------------------------------------------|
| Uterine tissue       | Severe edema with dark-red discoloration        |
| Caruncles            | Clearly visible                                 |
| Tissue contamination | Soil and bedding contamination present          |
| Lacerations          | Multiple superficial tears with active bleeding |
| Extremities          | Cold ears and limbs                             |
| Clinical diagnosis   | Complete complicated uterine prolapse           |

Emergency treatment was initiated immediately after diagnosis. Caudal epidural anesthesia effectively eliminated abdominal straining, allowing safe manipulation of the prolapsed uterus. The exposed tissue was thoroughly cleansed using a 1:1000 potassium permanganate solution to remove debris and reduce bacterial contamination. All visible lacerations and bleeding vessels were repaired using chromic catgut (2-0), after which the uterus was lubricated with sterile Vaseline and manually repositioned into its normal anatomical location. A modified Buhner-type vulvar retention suture using sterile infusion-set tubing was subsequently applied to prevent recurrence while allowing normal urination. Postoperative supportive therapy consisting of intravenous fluids, calcium borogluconate, flunixin meglumine, pheniramine maleate, enrofloxacin, vitamin B-complex, and a haemostatic agent was administered according to the treatment protocol described in Table 1.

The postoperative recovery was favorable. During the first week following treatment, progressive improvement in the cow's clinical condition was observed. Uterine edema gradually subsided, appetite returned to normal, and no abnormal vaginal discharge or excessive straining was detected. The retention suture was removed seven days after surgery without complications, and the vulvar wound healed satisfactorily following routine antiseptic care. Clinical follow-up conducted over a two-month period confirmed complete recovery, with no recurrence of uterine prolapse or evidence of reproductive complications (Table 3). The successful outcome demonstrates that prompt diagnosis, appropriate surgical management, and comprehensive postoperative care can result in an excellent prognosis even in complicated cases of uterine prolapse.

**Table 3.** Clinical outcome during postoperative follow-up.

| Follow-up period | Clinical findings                                                             | Outcome              |
|------------------|-------------------------------------------------------------------------------|----------------------|
| Day 1            | Uterus remained in normal anatomical position; no recurrent prolapse observed | Stable               |
| Day 3            | Marked reduction in uterine edema; appetite improved                          | Clinical improvement |
| Day 5            | No abnormal vaginal discharge or excessive straining                          | Good recovery        |
| Day 7            | Vulvar retention suture removed; wound healed satisfactorily                  | Successful healing   |
| One month        | Normal urination and defecation; no evidence of infection                     | Normal recovery      |
| Two months       | No recurrence of uterine prolapse; normal clinical condition                  |                      |

Uterine prolapse is recognized as one of the most serious postpartum emergencies in cattle because prolonged exposure of the uterus increases the risk of edema, contamination, tissue trauma, hemorrhage, shock, and septicemia (Miesner & Anderson, 2008). The present case developed within eight hours after calving, which is consistent with previous reports indicating that most uterine prolapses occur during the first 6–12 hours postpartum (Anderson & Miesner, 2008; Carluccio et al., 2020). Multiparity has been consistently identified as an important predisposing factor because repeated pregnancies progressively weaken the pelvic supporting structures (Borsberry & Dobson, 1989; Murphy & Dobson, 2002). The affected cow had experienced four previous parturitions, supporting the established association between increasing parity and the occurrence of uterine prolapse.

Several interacting factors have been reported to contribute to the development of uterine prolapse, including hypocalcaemia, prolonged dystocia, excessive fetal traction, retained fetal membranes, uterine atony, increased intra-abdominal pressure, obesity, and poor nutritional management (Risco et al., 1984; Potter, 2008; Purohit et al., 2018; Carluccio et al., 2020). Although serum calcium concentration was not measured in the present case, intravenous calcium borogluconate was administered because hypocalcaemia is frequently associated with impaired uterine muscle contraction and delayed uterine involution. In addition, the marked edema and continuous abdominal straining observed in this cow likely contributed to the progression and persistence of the prolapse.

Successful management of uterine prolapse depends on rapid correction before irreversible tissue damage develops. Delayed treatment substantially increases the likelihood of uterine necrosis, severe metritis, infertility, and death (Miesner & Anderson, 2008). Previous epidemiological investigations involving large dairy cattle populations have reported mortality rates exceeding 8% among cows affected with uterine prolapse, emphasizing the importance of immediate veterinary intervention (Carluccio et al., 2020). In the present case, early surgical correction, effective hemorrhage control, careful aseptic handling of the prolapsed uterus, and intensive postoperative therapy contributed to a successful clinical outcome without postoperative complications.

The modified Buhner-type retention suture using sterile infusion-set tubing proved to be a practical and effective method for preventing recurrence. Compared with conventional suture materials, infusion tubing distributes pressure more evenly across the vulvar tissues, reducing tissue trauma while maintaining adequate vulvar closure and allowing normal urination. Similar favorable outcomes have been reported by Bhattacharyya et al. (2012), Hasan et al. (2017), and Selvaraju et al. (2023), whose studies likewise demonstrated low recurrence rates following the use of modified vulvar retention techniques. A comparison between the present case and previously published reports is presented in Table 4.

**Table 4.** Comparison of the present case with previously reported management approaches for uterine/genital prolapse in cattle.

| Study                       | Animal/<br>Breed | Clinical<br>condition | Retention technique/<br>Treatment approach                                | Outcome                                       |
|-----------------------------|------------------|-----------------------|---------------------------------------------------------------------------|-----------------------------------------------|
| Bhattacharyya et al. (2012) | Crossbred cows   | Genital prolapse      | Modified Bühner technique using infusion-set tubing as retention material | Successful correction with reduced recurrence |

|                         |                        |                                                                      |                                                                                                                                                                                       |                                                                 |
|-------------------------|------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Hasan et al. (2017)     | Crossbred cow          | Vaginal prolapse                                                     | Bühner technique for vulvar retention                                                                                                                                                 | Successful recovery                                             |
| Kumbhar et al. (2009)   | Buffalo                | Postpartum uterine prolapse                                          | Manual replacement with supportive management                                                                                                                                         | Successful recovery                                             |
| Selvaraju et al. (2023) | Water buffalo          | Cervico-vaginal prolapse                                             | Modified vulval truss technique                                                                                                                                                       | Effective prevention of recurrence                              |
| Present case            | Crossbred Holstein cow | Complicated complete uterine prolapse with laceration and hemorrhage | Epidural anesthesia, antiseptic cleansing, laceration repair, manual repositioning, modified Bühner retention using sterile infusion-set tubing, and postoperative supportive therapy | Complete recovery with no recurrence during two-month follow-up |

## Conclusions

Although uterine prolapse occurs infrequently within cow populations, it can still be observed following calving and represents a genuine emergency. It is therefore critical that the uterus be replaced gently and thoroughly, with attention to haemostasis and asepsis. Management of uterine prolapse in this case involved cleansing the everted mass with an antiseptic solution, careful manual repositioning, closure of laceration bleeding points, retention with a modified Buhner-type suture using infusion-set tubing, and a structured postoperative regimen of fluids, anti-inflammatory, antihistamine, antibiotic, calcium, and vitamin B-complex therapy. This combination of measures resulted in an uneventful recovery without recurrence over a two-month follow-up period, and may serve as a practical reference for field veterinarians managing similar complicated presentations.

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## Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

## Ethical Clearance Statement

This manuscript describes the clinical management of a naturally occurring case of uterine prolapse in a crossbred Holstein cow presented to the veterinary clinic for routine treatment. As this is a single clinical case report and did not involve any experimental

procedures or interventions beyond standard veterinary practice, formal ethical approval from an institutional ethics committee was not required. Informed consent was obtained from the animal owner before treatment and for the publication of this case report, including the associated clinical information and images. All diagnostic and therapeutic procedures were performed in accordance with accepted standards of veterinary clinical practice, with due consideration for animal welfare.

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