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Mini review on uterine prolapse in bovine: Treatment and management

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Abstract
Uterine prolapse is a most critical emergency obstetrical problem in bovine, which mostly occurs within one day of postpartum and leads to death or future complications in timely untreated cases. A relaxed, atonic, flaccid uterus and tympany and retention of the placenta especially at the ovarian pole of the gravid horn in cows, and low serum calcium levels enhanced the chance of uterine prolapse. 2-3 hours after prolapse the prolapsed mass starts to become edematous and fibrosed some time excessive bleeding may cause the death of the animal. In this review predisposing factors, clinical findings, and management of uterine prolapse are mentioned below.

Keywords: Uterine prolapse in bovine, treatment, management

Introduction
Uterine prolapse refers to the displacement of a portion of the uterus through the vaginal opening from its natural position (Powell 2007) [20]. Any species of animal may have uterine prolapse, however pluriparous dairy and beef cattle (Roberts 1986)[24] experience it more frequently than primiparous cattle (Vandeplassche *et al*. 1963) [26] (Noakes *et al*. 2001) [16] and ewes, while sows are less likely to encounter it. Carnivores like rabbits, mares, and queens (bitch, queens) very rarely exhibit uterine prolapse. Up to 0.5-1.0 percent of calves may experience uterine prolapse. It typically happens right after calving in the third stage of labour (Joseph *et al*. 2001) [13], however it can occasionally happen several days after giving birth. The entire uterus and caruncles are exposed to the environment in third-degree prolapse (Philip *et al*., 2007) [14]. As a result of calving, the previously gravid uterine horn protrudes from the vulva after being invaginated or folded in. Other names for it include the casting of the calf bed, the casting of the "wethers," and the casting of the uterus. The syndrome is predisposed by a number of factors, including as low serum calcium levels (hypocalcemia), forceful foetal traction, the birth of a large foetus, placenta retention, and protracted dystocia. (Risco *et al*. 1984) [23] (Potter 2008) [19]. If the cervix is open and the uterus lacks tone, prolapse of the uterus can happen immediately or several hours after giving birth. The tissues nearly seem normal immediately when uterine prolapse occurs, but within a few hours, they swell and become edematous. Some animals may experience hypovolemic shock as a result of significant internal bleeding, an organ prolapse, or the incarceration of abdominal viscera (Potter 2008) [19]. The animal may pass away if untreated since it is a critical or emergency obstetric condition (Murphy and Dobson, 2002) [15] (Miesner, Anderson 2008) [14].

Predisposing factors
Bovine uterine prolapse typically happens after calving when the cervix is dilated and the uterus is not tonic (Merck vet manual).

- Long mesometrial attachment.
- Violent or strong tenesmus.
- Uterine that is atonic, flaccid, relaxed, and tympany (Hanie *et al*. 2006) [9]
- Placenta retention, particularly at the ovarian pole of the gravid horn in cows and the non-gravid horn in mares (Causey *et al*. 2007) [5].
- Prolonged relaxation of the perineum and pelvis.
- Stabled or confined cows throughout the winter
- The forced extraction of the foetus in dystocia.
- Most common in pluriparous dairy cows (Patterson *et al*. 1981) [17].

- The low plane of nutrition.
- In sheep, consuming clovers abundant in estrogenic hormones (Purohit *et al*. 2018) [22].
- Low calcium and phosphorus levels in blood.

Clinical findings

It generally happens immediately after calving in the third stage of labour (Joseph *et al.* 2001) [13], however it can occasionally happen several days after giving birth. Uterine prolapse was observed in 95.45% of the animals within 6 days of parturition, according to Bhattacharyya *et al.* (2012) [3]. The fetal membranes, also known as the uterine mucous membranes, are exposed to the environment and typically contaminated with excrement, straws, dirt, and/or blood clots, unless the case is extremely recent or fresh. The tissues initially seem almost normal following the prolapse, but after a few hours they swell and become edematous. Urinary retention is occasionally associated with uterine prolapse. The majority of animals show symptoms of hypocalcemia in varied degrees, including weakness, depression, low body temperature, anxiety, struggle, prostration, and coma. Some animals may look healthy (Abbas *et al.* 2016) [1]. Due to internal blood loss (due to the rupture of uterine and/or ovarian blood arteries), laceration of the prolapsed organ, or imprisonment of abdominal viscera, certain animals may have hypovolemic shock (Potter 2008) [19]. Symptoms of shock, such as pale mucous membranes, a slower rate of capillary refill, and tachycardia, are frequently indicative of a poor prognosis.

Management of uterine prolapse

First, caudal epidural anaesthetic (2 percent lignocaine) is administered to cows in the intercoccygeal region to avoid repeated straining (Ismail *et al.* 2016) [12] after that, apply a gentle antiseptic like potassium permanganate to the prolapsed mass (Gowda *et al.* 2014) [8] using a non-irritating antiseptic. Examples, M&B antiseptic cream, K-Y jelly, liquid paraffin, coconut oil, and other lubricants that don't cause irritation (Miesner, Anderson 2008) [14]. To avoid the prolapsed mass from becoming contaminated further by touching the ground, elevate the prolapsed part with the help of an assistant up to the level of the sacrum. To reduce swelling or oedema, osmotic agents like sugar and salt are beneficial (Roberts 1986) [24].

Amplifying uterine damage can be achieved by physically massaging the prolapse mass with lubrication (Youngquist *et al.* 1989) [28] Reposition it inside and keep it there for a while to stop a purse string suture over the vulva from prolapsing. In extreme circumstances, uterine amputation may be an option if repair is not feasible. The farmer's greatest loss will be the absence of any future pregnancies. Oxytocin injections (20–40 IU) given within 2-4 hours of birth may help in the uterus involution (Hopper *et al.* 2007) [10].

Table 1: Different treatment protocols for uterine and cervicovaginal prolapse in different report

Species	Case	Method of treatment	Reference
Cross-breed cow	Uterine prolapse	Caudal epidural anesthesia (5ml 2% lignocaine), administered 4 liter NS, 3gm ceftriaxone, 400ml calcium borogluconate, and 10ml flunixin meglumine I/v for three days and Buhners suture applied after 3 days animal recover uneventfully.	Dar *et al.* (2014) [6]
Cross-breed cow	Cervico-vaginal prolapse	Administered (5 ml 2% lignocaine) in 1st intercoccygeal space, then prolapse mass was washed with 1%pp and Buhners suture applied on the vulva. In supportive therapy ceftiofur (15mg/kg body wt. i/m), Meloxicam (0.5mg/kg body wt. i/m), and DNS (3-liter i/v) were administered on 1st day.	Baruti *et al.* (2020) [2]
Cow	Cervico-vaginal prolapse	Administered 2% lignocaine HCl (10 ml) at first inter-coccygeal space. then prolapse mass was washed with 1% pp to remove dirt and Buhners suture was applied on the vulva then the animal was injected with 10ml vitamin B-complex, 450ml calcium borogluconate , 5% DNS I/V and 5ml meloxicam I/M.	Vaid *et al.* (2018) [25]
Cow	Uterine prolapse	The technique which was adopted consists of raising the rear end of the cow to a height of about one meter using a fore-end loading tractor. The uterus can then be washed and replaced quite simply by gently holding it up to the vulval lips and allowing gravity to do most of the work of drawing it back into the cow. All the vets have to do is to ensure that there is no rotation of the uterus, thus preventing its replacement.	White *et al*., (2007) [27]
Murrah buffalo	Uterine and intestinal prolapse	Prolapse mass was washed with 0.1% pp and administered 2% lignocaine as epidural anesthesia, and lubrication was done with vegetable oil before replacement. In supportive therapy 3 liters Intalyte I/V and 750mg progesterone I/M were injected.	Prasad, Rajesh (2014) [21]

Note- NS: normal saline, DNS: dextrose normal saline, I/V: intravenous, I/M: intramuscular, pp: potassium permanganate, HCL: hydrochloric acid.

Table 2: Recovery and conception percentage after prolapse treatment

Animal	Recovery percentage after treatment	Conception percentage after treatment	References
Cow	72.4%	81.25%	Gardner *et al*. (1990) [7]
Cow	73.50%	83.7%	Jubb *et al*., (1990) [29]
Cow	80%	80.5%	(Murphy, Dobson, 2002) [15]
Cow	81.9%	84.7%	Carluccio *et al*. (2020) [4]
Cow	64.7%	80.6	Ishii *et al*. (2010) [11]

Conclusion

The conclusion of this review was animals with uterine prolapse can be treated successfully with surgical or medical treatment by using epidural anesthesia, antibiotics, non-steroid anti-inflammatory drugs, and fluid therapy. Farmers can achieve further or future pregnancies by caring for an animal during uterine prolapse.

Conflict of interest

The authors declare that there is no conflict of interest.

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