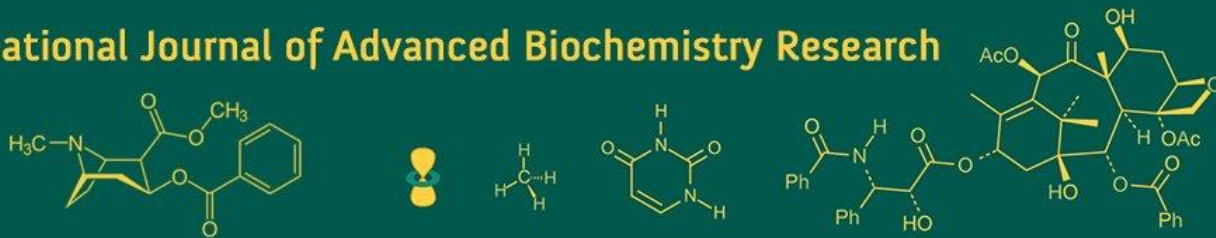


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Successful caesarean management of pre-cervical uterine torsion in a Murrah Buffalo

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Abstract

Uterine torsion is one of the most common causes of dystocia in buffaloes and frequently necessitates immediate obstetrical intervention to preserve maternal and fetal viability. A 4-year-old Murrah buffalo at approximately 9 months of gestation was presented to the Veterinary Clinical Complex, MRCVS, Jhajjar, Haryana, with a history of anorexia for 4-5 days and previously diagnosed uterine torsion. The animal had undergone repeated rolling correction (Schaffer's method) by a field veterinarian without successful detorsion. Clinical examination revealed an alert and active animal with normal conjunctival mucous membranes, vulvar edema, udder engorgement, and foul-smelling mucopurulent vaginal discharge. Transrectal ultrasonography demonstrated a viable pregnancy characterized by placentomes measuring approximately 60mm × 45 mm and the presence of anechoic allantoic fluid containing hyperechoic floating debris suggestive of pyogenic exudation. Fetal viability could not be conclusively assessed. Per-rectal examination confirmed a right-sided pre-cervical uterine torsion exceeding 180° with incomplete cervical dilation. Considering the chronicity of the condition and previous unsuccessful rolling attempts, cesarean section was elected as the treatment of choice. Surgical correction resulted in successful resolution of the maternal condition. This case highlights the diagnostic value of ultrasonography in chronic uterine torsion cases and supports timely cesarean section following failed conservative correction methods.

Keywords: Buffalo, uterine torsion, dystocia, ultrasonography, cesarean section, allantoic fluid, pyogenic exudation

1. Introduction

Uterine torsion is defined as the rotation of the gravid uterus around its longitudinal axis and constitutes a major cause of dystocia, fetal death, and maternal morbidity in large domestic animals (Ali *et al.*, 2016; Pushp *et al.*, 2024) ^[1, 22]. In torsion species-specific variations exist in its clinical presentation and management. In buffaloes, uterine torsion is commonly associated with prolonged tenesmus, anorexia, and reduced fecal output, whereas affected cattle frequently exhibit systemic symptoms including pyrexia, tachycardia, and inappetence (Yadav *et al.*, 2023; Tharwat *et al.*, 2023) ^[27]. Uterine torsion may impair uteroplacental perfusion and may result in partial or complete occlusion of the birth canal, thereby compromising fetal viability and maternal health (Dioli *et al.*, 2020; Al-Saeed *et al.*, 2024) ^[8, 2]. Prolonged torsion has been associated with fetal death, premature expulsion of the fetus, retention of fetal membranes, uterine rupture, endotoxemia, reduced reproductive performance and maternal mortality (Hussain *et al.*, 2021; Mahmoud *et al.*, 2020) ^[11, 14].

Definitive diagnosis is established through combined per-vaginal and per-rectal examination, enabling identification of spiral vaginal folds, displacement and tension of the broad ligaments and determination of the direction and extent of uterine rotation (Peter *et al.*, 2013; Tharwat *et al.*, 2023) ^[17]. Hematological alterations in affected buffaloes include normocytic normochromic anemia, evidenced by decreased erythrocyte count, hemoglobin concentration, and packed cell volume, which may result from circulatory disturbances and hemorrhage associated with dystocia (Amer and Hashem, 2008). Leukocytic responses are characterized by neutrophilia, monocytosis, lymphocytopenia, and eosinopenia, reflecting systemic stress and inflammation and may persist during the early postpartum period following surgical correction (Kaur *et al.*, 1993; Phogat *et al.*, 1991) ^[25, 18].

Pharmacological induction of uterine relaxation can be achieved using β_2 -adrenergic agonists such as clenbuterol, which exert a tocolytic effect by inhibiting myometrial contractility (Ballarini *et al.*, 1978; Bostedt and Rudloff, 1983) [4, 5]. Therapeutic management includes detorsion by rolling, manual correction, or cesarean section with selection of the procedure based on the degree and duration of torsion, cervical dilatation, fetal viability and maternal condition (Khalphallah *et al.*, 2023; Đuričić *et al.*, 2023) [12, 9]. In chronic cases exceeding 72 hours in duration cesarean section is considered the treatment of choice owing to the reduced likelihood of successful detorsion and the increased risk of maternal and fetal complications associated with repeated rolling attempts (Prabhakar *et al.*, 1995) [19].

This case report highlights timely management of the uterine torsion. Prognosis and future fertility of dam depends on severity and duration of uterine torsion and methods of handling.

2. Case Report

A 4-year old, female Murrah buffalo at approximately 9 months of gestation was presented to the Veterinary Clinical Complex, MR College of Veterinary Science and Research Centre, Jhajjar, Haryana, India with the chief complaint of uterine torsion. The animal had previously been diagnosed with uterine torsion and treated by a field veterinarian using Schaffer's rolling method. Upon presentation, the buffalo was alert, active, and standing normally. General clinical examination revealed normal conjunctival mucous membranes, indicating adequate peripheral perfusion and absence of severe systemic compromise. Pronounced vulvar edema and udder engorgement were observed, suggesting advancement of gestation and impending parturition. A foul-smelling mucopurulent vaginal discharge was evident, indicating possible uterine contamination and inflammatory changes associated with prolonged dystocia.

Trans-rectal ultrasonography was performed using a real-time B-mode ultrasound scanner equipped with a linear-array transducer of frequency 7.5-10MHz Easi-Scan® ultrasound scanner (IMV Technologies, Normandy, France)). Placentomes were clearly visualized and measured approximately 60 × 45 mm (Fig. 1A). The allantoic cavity contained predominantly anechoic fluid interspersed with multiple hyperechoic floating debris (Fig. 1B).

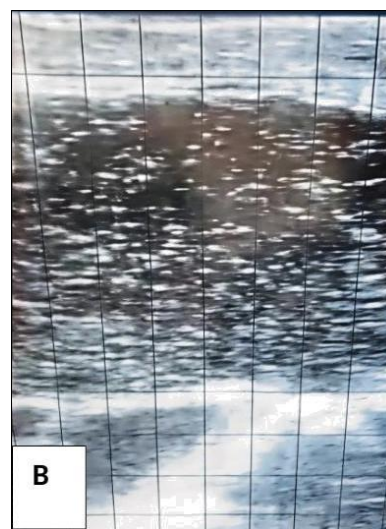


Fig 1: (A) Ultrasonographic Visualization of Placentomes. (B) Hyperechoic floating debris seen under USG

These echogenic structures were interpreted as inflammatory or pyogenic exudative material within the fetal fluids. Although pregnancy was confirmed, fetal viability could not be accurately determined. A detailed per-rectal and per-vaginal examination was conducted revealed a right-sided pre-cervical uterine torsion exceeding 180°, with incomplete cervical dilation per-rectally.

Prior to surgical intervention, blood samples were collected aseptically from the jugular vein into EDTA-coated vacutainer tubes for complete blood count (CBC) analysis with hematological analyser (Celltac alpha MEK-6550 by NIHON KOHDEN). Complete blood count analysis (Table 1) revealed severe anemia characterized by significantly reduced hemoglobin (6.0 g/dL), hematocrit (22.7%), and erythrocyte count ($4.04 \times 10^6 / \mu\text{L}$) associated with prolonged uterine torsion and fetal death. Red cell indices demonstrated hypochromia with decreased MCHC (26.4 g/dL) and elevated RDW (16.4%), indicating anisocytosis. Total leukocyte and platelet counts remained within reference limits. These findings are suggestive of severe hypochromic anemia, most likely associated with iron deficiency. Similar hematological alterations have been reported in buffaloes suffering from uterine torsion and fetal emphysema (Purohit *et al.*, 2011; Noakes *et al.*, 2019) [21, 16].

Table 1: Blood Parameters of the buffalo on day of presentation

Parameter	Values/unit	Normal Range*
WBC	$8.4 \times 10^3 / \mu\text{L}$	5.80-15.5
RBC	$4.04 \times 10^6 / \mu\text{L}$	5.12-9.30
HGB	6.0 g/dL	8.9-15.8
HCT	22.7%	25.3-38.5
MCV	56.4 fL	35.8-50.5
MCH	14.8 pg	-
MCHC	26.4 g/dL	34.8-39.2
RDW	16.4%	-
PLT	$246 \times 10^3 / \mu\text{L}$	131.5-604.0
MPV	6.7 fL	-
PDW	17.0	-
PCT	0.16%	-

(Dhillon *et al.*, 2020) [7]; Bold letter describe low values than normal range.

The surgical site was aseptically prepared after shaving the site using a surgical solution 7.5% Povidone-iodine (Betadine® by CONTROL D). Local anaesthesia was achieved by infiltration

of 2% Lignocaine (Xylocaine 2% by Zydus healthcare) on the incision line. To prevent tenesmus and violent movement, posterior epidural anaesthesia using ^[20] ml of 2% Lignocaine (Xylocaine 2%, by Zydus healthcare) was also given. A horizontal line (left paramedian) of incision parallel to milk vein about 35 cm long was put to incise the skin. Further, abdominal muscles were incised ligating all bleeding vessels, while peritoneum was incised using scissors. Uterus was sectioned avoiding placentoms on greater curvature and a dead foetus in the anterior presentation was removed. Foetal fluid and membranes were removed out. Uterus was cleaned using Normal saline solution. The uterine incision was sutured by the Cushing method followed by the Lambert method using braded and coated polyglycolic acid (Truglyde® 2, Helthium Medtech limited, Bangalore, Karnataka). Peritoneum and muscle was sutured with absorbable braded and coated polyglycolic acid (Truglyde® 2). Underlying fascia and muscle were sutured with absorbed braded and coated polyglycolic acid (Truglyde® 2-0, Helthium Medtech limited, Bangalore, Karnataka) and skin was sutured through nonabsorbable monofilament polyamide black (Trulon® 2, Helthium Medtech limited, Bangalore, Karnataka) and purse string suture was removed immediately after surgery. Antiseptic dressing was done with povidone-iodine scrub (Sistadine microbicidal solution-10%, Sista laboratories, Narela Delhi) and triple-antibiotic (neomycin sulphate, polymyxin B sulphate and bacitracin; Aluspray-AWD®, Vetoquinol). Post-operatively, the cattle were given Penicillin-streptomycin combination (Penstrep) was injected intramuscularly once daily at a dose of 10,000 IU penicillin/kg, 6.2 mg of streptomycin/kg and 6.25 mg of dihydrostreptomycin/kg for five successive days. Phenylbutazone (Phenylbutazone 20% injection) was given intravenously at a dose of mg/kg body weight once daily for three successive days as anti-inflammatory drug. The wound was dressed three times a day with Povidone-iodine antiseptic solution for 10 days. Then, the stitches were removed 10 days post-operatively. The case was followed up for 2 months with uneventful recovery.

3. Discussion

As in our study uterine torsion cause of maternal dystocia aligned with other studies which also found that uterine torsion is the most common maternal cause of dystocia in buffaloes and may account for more than 50% of maternal dystocia cases encountered in referral clinics (Purohit, 2013; Yadav *et al.*, 2023) ^[20, 27]. Prolonged torsion compromises uterine and placental blood circulation, resulting in fetal hypoxia, death, emphysema, uterine edema and incomplete cervical dilatation (Purohit *et al.*, 2011) ^[21] which is observed in our case as a dead foetus was expelled out after caesarean section. In the present case, failure of correction by Schaffer's method, presence of incomplete cervical dilatation (ICD), foul-smelling discharge and an emphysematous fetus indicated a chronic uterine torsion which was verified by history provided by owner. Similar findings have been reported in buffaloes with longstanding torsion where vaginal delivery becomes unlikely (Srinivas *et al.*, 2007) ^[24]. Therefore, caesarean section was performed as the treatment of choice because surgical intervention is recommended when detorsion fails, cervical dilatation is inadequate, or the fetus is dead and emphysematous (Purohit, 2013; Aubry *et al.*, 2008) ^[20, 31]. Prompt surgical management and postoperative care contributed to successful recovery of the dam.

4. Conclusion

Uterine torsion in buffaloes remains a critical obstetrical emergency associated with significant maternal and fetal losses. Prompt diagnosis using clinical examination and ultrasonography, followed by timely therapeutic intervention, is essential for favorable outcomes. The severity of hemato-biochemical alterations and fetal viability status may serve as important prognostic indicators in affected cases. Early correction of torsion can improve reproductive prognosis and reduce peri-parturient losses in buffaloes.

References

1. Ali A, Derar D, Tharwat M, Zeitoun MM, Alsobyil FA. Dystocia in dromedary camels: Prevalence, forms, risks and hematobiochemical changes. *Anim Reprod Sci.* 2016;170:149-156.
2. Al-Saeed FA, Ali ME. Thyme and oregano oil potential therapeutics against malathion toxicity through biochemical, histological, and cytochrome P450 1A2 activities in male Wistar rats. *Animals.* 2024;14(19):2914.
3. Aubry P, Warnick LD, DesCôteaux L, Bouchard É. A study of 55 field cases of uterine torsion in dairy cattle. *Can Vet J.* 2008;49(4):366-372.
4. Ballarini G, Belluzi G, Beltrami F, Brisighella G, Fanini GB, Signorini GC. Indications for induction of uterine relaxation in cattle using clenbuterol. *Clin Vet.* 1978;101:766-771.
5. Bostedt H, Rudloff PR. Prophylactic administration of the beta-blocker carazolol to influence the duration of parturition in sows. *Theriogenology.* 1983;20:191-196.
6. DeBruin MG. Abnormal parturition—Dystokia. In: *Bovine Obstetrics.* New York: WR Jenkins Co; 1910. p. 144-170.
7. Dhillon KS, Randhawa CS, Gupta K, Singh RS, Chhabra S. Reference values for haematological and biochemical profile in adult Indian buffaloes. *Buffalo Bull.* 2020;39(2):145-154.
8. Dioli M. Dromedary (*Camelus dromedarius*) and Bactrian camel (*Camelus bactrianus*) crossbreeding husbandry practices in Turkey and Kazakhstan: An in-depth review. *Pastoralism.* 2020;10(1):6.
9. Đuričić D, Samardžija M. Combined transrectal and vaginal manual detorsion of pre-cervical uterine torsion in cows. *Reprod Domest Anim.* 2023;58:496-499.
10. Frazer GS, Perkins NR, Constable PD. Bovine uterine torsion: 164 hospital referral cases. *Theriogenology.* 1996;46(5):739-758.
11. Hussain T, Murtaza G, Metwally E, Kalhoro DH, Kalhoro MS, Rahu BA, et al. The role of oxidative stress and antioxidant balance in pregnancy. *Mediators Inflamm.* 2021;2021(1):9962860.
12. Khalphallah A, Elmeligy E, Al-Daek T, Hussein HA, Mohamed RH, Sabra MS, et al. Comparative study between efficacy of dexamethasone-prostaglandin-receptal combination and mechanical correction in uterine torsion cases in Egyptian buffalo-cows (*Bubalus bubalis*). *BMC Vet Res.* 2023;19:92.
13. Li Y, Zhao Z, Yu Y, Liang X, Wang S, Wang L, et al. Plasma metabolomics reveals pathogenesis of retained placenta in dairy cows. *Front Vet Sci.* 2021;8:697789.
14. Mahmoud EA, Essawi WM, Neamat-Allah AN. Influence of uterine torsion in water buffaloes (*Bubalus bubalis*) with insights into the hematological and biochemical prognostic

- values regarding manual correction. Trop Anim Health Prod. 2020;52(6):3165-3171.
15. Monaco D, Castagnetti C, Lanci A, Osman TK, Lacalandra GM, Fusi J. On-field gross morphology evaluation of dromedary camel (*Camelus dromedarius*) fetal membranes. Animals. 2024;14(11):1553.
 16. Noakes DE, Parkinson TJ, England GCW. Veterinary Reproduction and Obstetrics. 10th ed. Philadelphia: Elsevier; 2019.
 17. Peter AT. Bovine placenta: A review on morphology, components, and defects from terminology and clinical perspectives. Theriogenology. 2013;80(7):693-705.
 18. Phogat JB, Bugalia NS, Verma SK, Inderjeet Singh IS. Plasma cholesterol and haemogram in buffaloes affected with uterine torsion. Indian J Anim Reprod. 1991;12:92-94.
 19. Prabhakar S, Dhaliwal GS, Sharma RD, Nanda AS. Success of treatment in relation to milk letdown and pelvic relaxation in bovines with torsion of uterus. Indian J Anim Reprod. 1995;16:33-35.
 20. Purohit GN. Maternal dystocia and uterine torsion in buffaloes. In: Bubaline Theriogenology. 2013.
 21. Purohit GN, Barolia Y, Shekher C, Kumar P. Diagnosis and correction of uterine torsion in cattle and buffaloes. Raksha Techn Rev. 2011;1(1):11-17.
 22. Pushp MK, Meena YK, Meena DS. Management of uterine torsion in Murrah buffaloes: Clinical analysis. Int J Vet Sci Anim Husb. 2024;9:259-261.
 23. Sendag S, Sickinger M, Arslan T, Schuler G, Wehrend A. Effect of uterine torsion intrapartum on concentrations of placental estrogens and progesterone in cattle. Vet Med Sci. 2023;9(4):1764-1770.
 24. Srinivas M, Sreenu M, Rani NL, Naidu KS, Prasad VD. Studies on dystocia in graded Murrah buffaloes: A retrospective study. Buffalo Bull. 2007;26(2):40-45.
 25. Kaur T, Singh BS. Reproductive disorders in buffaloes: Haematobiochemical studies. Indian J Anim Reprod. 1993.
 26. Tharwat M, Ali A, Derar D, Oikawa S, Almundarij TI. Effects of dystocia on the cardiac biomarker troponin I, acid-base balance and blood gases alongside the hematobiochemical profiles in female dromedary camels. 2024.
 27. Yadav R, Yadav P, Singh G. Uterine torsion in buffaloes: A complete review. Buffalo Bull. 2023;42(4):479-490.