A retrospective study on 138 referral cases of uterine torsion in cattle & buffalo

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Abstract

A retrospective study of 180 cases of bovine dystocia presented to Department of Veterinary Gynaecology and Obstetrics, NTR College of Veterinary Science, Gannavaram, was conducted between June 2022 and September 2023. The incidence of torsion was recorded as 76.67% (138/180). Among the 138 animals, 93.48% were buffaloes and 6.52% were cows. Detailed obstetrical examination revealed a higher incidence of uterine torsion in pluriparous animals (72.46%) compared to primipara (27.54%), with right-sided torsion being more prevalent (93.48%). Post-cervical torsion was more common (90.58%) than pre-cervical torsion (9.42%). Most cases had a torsion of 90-180 degrees (57.25%), compared to 0-90 degrees (14.49%) and 180-360 degrees and greater than 360 degrees (28.26%). Modified Schaffer's method of detorsion was successful with per-vaginal delivery of calves in 100 buffaloes (77.52%) and 4 cows (44.44%), with more calves being delivered in anterior longitudinal presentation (95.2%) rather than posterior longitudinal presentation (4.8%). The survival rate of the newborn calves was 17.70%, with a higher proportion of males (65.49%). This study provides field-level insights into the clinical presentation and outcome of uterine torsion in cattle and buffaloes under referral conditions.

Key Words: Bovine; Dystocia; Retrospective study; Uterine torsion

Introduction

Uterine torsion, defined as the twisting of the pregnant uterus along its longitudinal axis, is one of the most common causes of dystocia in bovines, particularly in buffaloes (Purohit et al. 2012; Jeengar et al. 2015; Chandra Prakash et al., 2018). The condition is frequently reported during the last trimester and contributes significantly to maternal and fetal morbidity and mortality (Ali et al. 2011). The higher incidence in buffaloes compared to cattle has been attributed to anatomical factors such as relatively more relaxed and lengthy broad ligaments, leading to reduced uterine stability during advanced pregnancy (Jeengar et al. 2015).

Uterine torsion is a common cause of dystocia encountered by veterinarians worldwide,in buffaloes, with reported incidences exceeding 50% in referral cases (Ramteke and Razzaque 2019; Praveen Kumar et al. 2023). The condition is associated with economic losses which include decreased milk production, fetal mortality, endometritis, delayed uterine involution, and infertility, and these complications can be severe (Purohit et al. 2012). The prognosis depends on the duration and degree of torsion as well as the time interval, as delayed correction may lead to compromised uterine blood flow, fetal hypoxia, and increased risk of maternal mortality (Ali et al. 2011).

Despite its clinical importance, there is limited recent data on the incidence, clinical presentation, and outcomes of uterine torsion under field conditions, particularly in Indian bovine populations (Praveen Kumar et al. 2023). Therefore, the present study was undertaken to evaluate the incidence, clinical characteristics, and outcome of uterine torsion cases in cattle and buffaloes presented to a referral veterinary hospital.

Materials and methods

The present study reports 138 clinical cases of uterine torsion in cattle and buffaloes that were referred to the Department of Veterinary Gynecology and Obstetrics, NTR College of Veterinary Science, Gannavaram, Andhra Pradesh. The cases, were presented between June 2022 and September 2023, involving mostly advanced pregnant animals. The clinical signs exhibited included anorexia, straining, kicking at the abdomen, restlessness, and looking towards the flanks and frequent lying and getting up, which led to the suspicion of torsion. The diagnosis was confirmed through per-vaginal and per-rectal examinations. The study analyzed various factors, including the stage of gestation, parity, type, direction, and degree of torsion, cervical dilatation post-detorsion, and survival rates of the dam and fetus. Gestation stage and parity were based on the owner's history. The type and direction of torsion were determined through detailed obstetrical examinations, considering the movement of the hand in the vaginal cavity, the direction of spiral folds in the vagina and crossing over of the broad ligaments. The degree of torsion was assessed by the twists and evaluating the tightness of the spiral folds in the vagina and uterine body. Modified Schaffer's method was adopted for relieving uterine torsion in buffaloes, while Schaffer's method of detorsion was applied in cattle. Modified Schaffer’s method involved rolling the animal in the direction of torsion while stabilizing the fetus to achieve detorsion. The results were analyzed by using Mann Whitney U test.

Results & Discussion

Uterine torsion was observed more frequently in buffaloes (93.48%) compared to cattle (6.52%), indicating a higher susceptibility of buffaloes under field conditions (Fig. 5). This finding is consistent with previous reports suggesting a higher incidence of uterine torsion in buffaloes due to anatomical and physiological predispositions, particularly the relatively longer and more relaxed broad ligaments which reduce uterine stability during advanced pregnancy (Jeengar et al. 2015; Ramteke and Razzaque 2019).

A higher proportion of uterine torsion cases was recorded in pluriparous animals (72.46%) than in primiparous animals (27.54%), although the difference was not statistically significant (Mann–Whitney U test, $p = 0.713$) (Fig. 1). The increased occurrence in pluriparous animals may be associated with age-related changes such as reduced uterine tone, stretching of pelvic ligaments, and increased abdominal space, which predispose the gravid uterus to displacement and rotation (Praveen Kumar et al. 2023).

Most cases of uterine torsion were observed at full-term gestation (88.41%) compared to pre-term cases (11.59%), with no significant difference ($p = 0.963$) (Fig. 2). The predominance at term can be attributed to the increased size and weight of the gravid uterus, along with enhanced fetal movements during late gestation, which together increase the likelihood of uterine instability and torsion (Purohit et al. 2012).

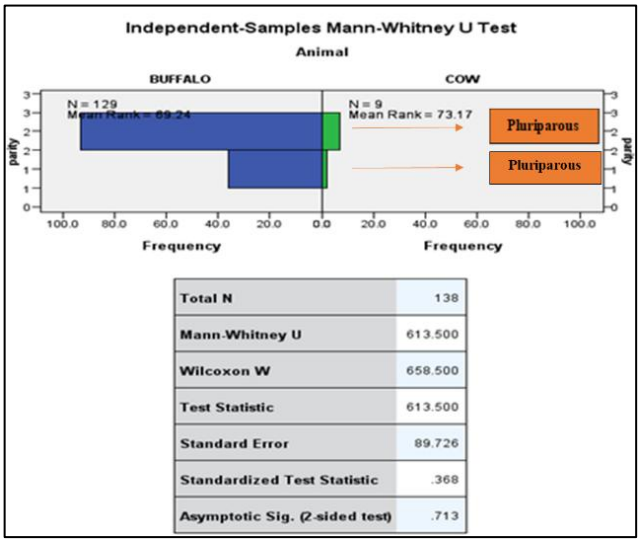
Post-cervical torsion was significantly more common (90.58%) than pre-cervical torsion (9.42%) (Mann–Whitney U test, $p = 0.001$) (Fig. 3). This observation may be explained by the structural weakness at the anterior vaginal region and cervical junction, which is considered a predisposed site for torsion due to limited muscular support and anatomical configuration (Ramteke and Razzaque 2019).

Right-sided torsion predominated (93.48%) over left-sided torsion (6.52%), although the difference was not statistically significant ($p = 0.858$) (Fig. 4). The higher occurrence of right-sided torsion may be attributed to

the presence of the rumen on the left side of the abdominal cavity, which restricts uterine movement and favors rotation towards the right side, thereby influencing the direction of torsion (Praveen Kumar et al. 2023).

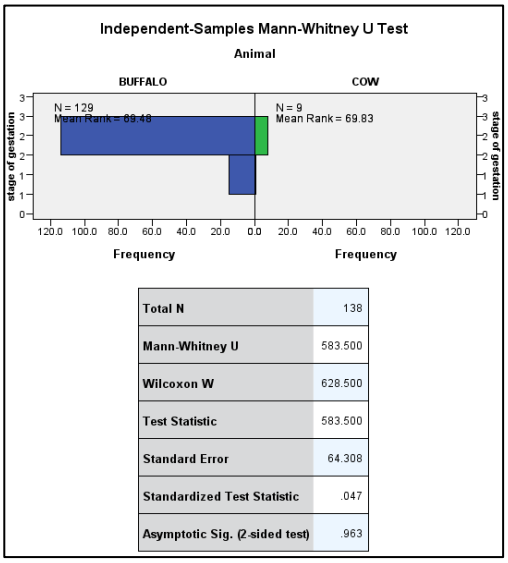
With respect to the degree of torsion, the majority of cases (57.25%) exhibited torsion between 180° and 270°, followed by torsion greater than 270° (28.26%) and less than 180° (14.49%) (Fig. 6). Increasing severity of torsion is associated with progressive compromise of uterine blood flow, leading to venous stasis, fetal hypoxia, and reduced viability, which ultimately affects the prognosis of both the dam and fetus (Ali et al. 2011).

Detorsion using Schaffer's method in cattle and modified Schaffer's method in buffaloes was successful in 87.68% of cases. Per-vaginal delivery following detorsion was achieved in 104 animals, whereas 12 cases required cesarean section. Failure of detorsion in 12.32% of cases may be attributed to prolonged duration of torsion, leading to adhesions between the uterus and surrounding abdominal organs, as well as reduced tissue viability and increased friability of the uterine wall (Jeengar et al. 2015).



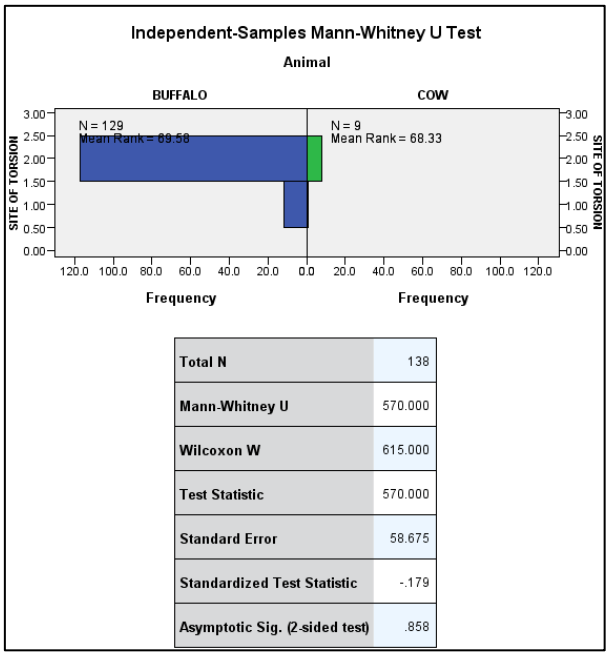
Total N	138
Mann-Whitney U	613.500
Wilcoxon W	658.500
Test Statistic	613.500
Standard Error	89.726
Standardized Test Statistic	.368
Asymptotic Sig. (2-sided test)	.713

Fig.1. Mann Whitney U test for parity



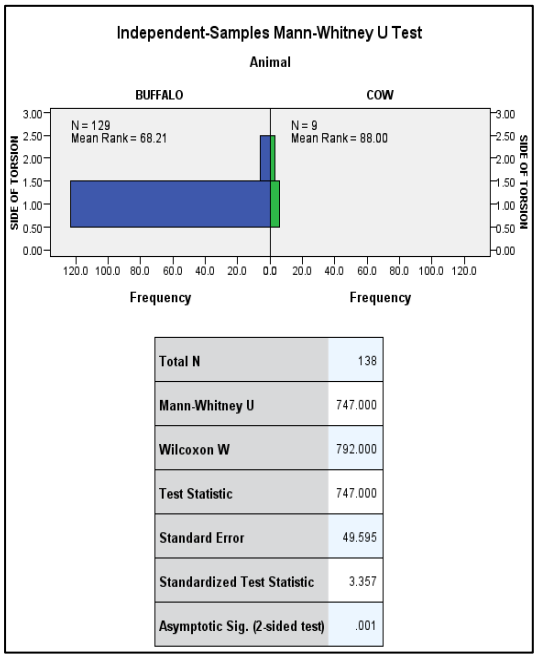
Total N	138
Mann-Whitney U	583.500
Wilcoxon W	628.500
Test Statistic	583.500
Standard Error	64.308
Standardized Test Statistic	.047
Asymptotic Sig. (2-sided test)	.963

Fig.2. Mann Whitney U test for stage of Gestation



Total N	138
Mann-Whitney U	570.000
Wilcoxon W	615.000
Test Statistic	570.000
Standard Error	58.675
Standardized Test Statistic	-.179
Asymptotic Sig. (2-sided test)	.858

Fig.3. Mann Whitney U test for site of torsion



Total N	138
Mann-Whitney U	747.000
Wilcoxon W	792.000
Test Statistic	747.000
Standard Error	49.595
Standardized Test Statistic	3.357
Asymptotic Sig. (2-sided test)	.001

Fig.4. Mann Whitney U test for side of torsion

Following detorsion, the majority of calves were delivered in anterior longitudinal presentation (95.2%), while posterior presentation was observed in only 4.8% of cases (Fig. 7). These findings suggest that abnormal fetal presentation may not play a primary role in the etiology of uterine torsion, but rather occurs as a secondary consequence of uterine rotation (Praveen Kumar et al. 2023).

A higher proportion of male calves (65.49%) was recorded compared to female calves (34.51%) (Fig. 8); however, previous studies indicate that fetal sex may not significantly influence the occurrence of uterine torsion, suggesting that this observation may be incidental (Ramteke and Razzaque 2019).

The overall survival rate of newborn calves was low (21.24%), indicating that uterine torsion has a substantial negative impact on fetal viability. This reduced survival may be attributed to compromised uterine circulation, leading to fetal hypoxia, increased carbon dioxide tension, and eventual fetal death if intervention is delayed (Ali et al. 2011). Therefore, early diagnosis and timely correction of uterine torsion are critical for improving both maternal and fetal outcomes.

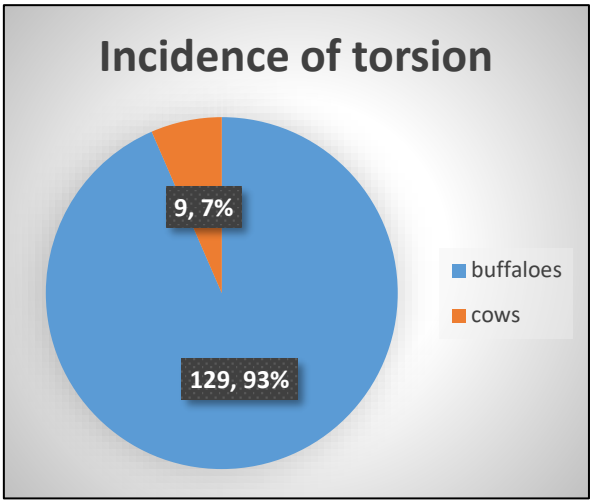


Fig.5. Image showing incidence of torsion between buffalo & cattle

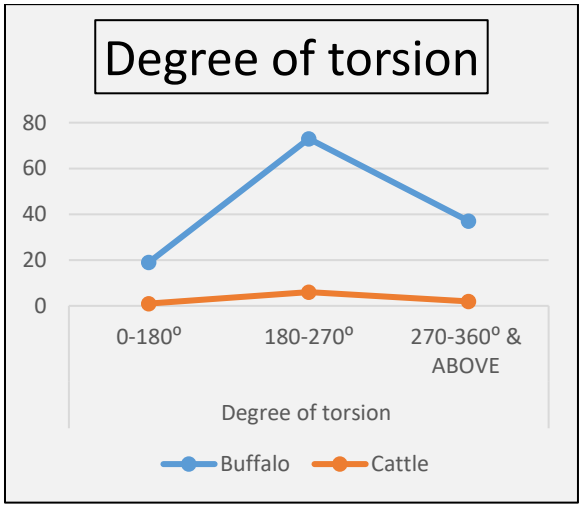


Fig.6. Incidence of various degrees of torsion

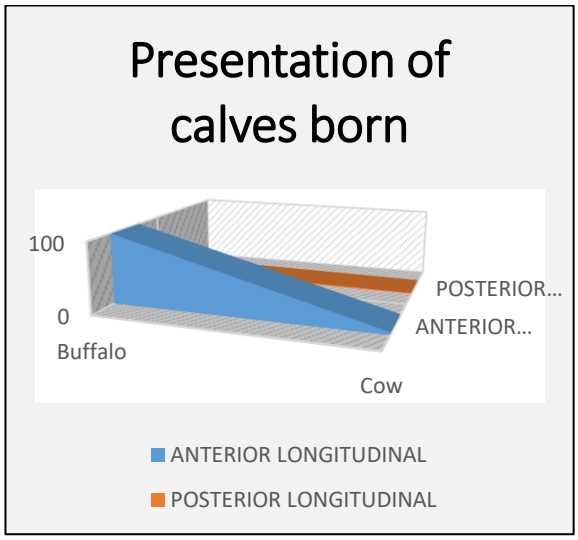


Fig.7. Presentation of calves born after releaving dystocia

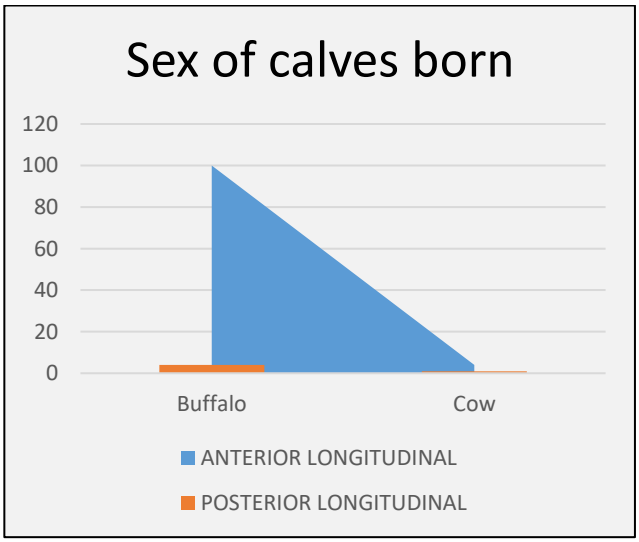


Fig.8. Image comparing the sex of calves born after releaving dystocia in cattle and buffaloes

Conclusion

Based on the findings of the retrospective analysis, it was clinched that uterine torsion was more prevalent in pluriparous bovines, especially those at full term, and it occurred more frequently in buffaloes than in cows. Moreover, right sided and post-cervical uterine torsions were observed more frequently. Additionally, instances of uterine torsion generally resulted in a lower likelihood of fetal survival.

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