Obstructive Parturition with Special Reference to Uterine Torsion

Uiase Bin Farooq¹, Shafiya Imtiaz Rafiqi², Rajni Chaudhary² and Lalrengpuii Sailo²

¹Assistant Professor, School of Veterinary Medicine, Hawassa University, Ethiopia, ²PhD Scholar, Indian Veterinary Research Institute, Bareilly, India.

Abstract
Obstructive parturition is the most common reproductive disorder of cows and a major cause of deaths in cows and calves. It is expected to occur in about 10-15% of first-calf heifers and in 3-5% of mature cattle. Studies indicate that animals experiencing dystocia while delivering a live calf may have decreased rebreeding rates. In cattle the most common cause is foeto-maternal disproportion, but faulty disposition is also often to blame. Bovine uterine torsion is a common form of dystocia encountered worldwide with reports of 1-20% of all attended calvings by veterinarians. Early intervention minimises the effects of dystocia on both dam and calves. Treatment is critical since calves exposed to dystocia at birth have double the rate of death compared with calves born from a normal calving and many postpartum complications in dams also. This report describes a brief overview on handling obstructive parturition in case of uterine torsion.

Keywords: Cattle, Calves, Postpartum, Pregnancy, Schaffer’s Method.

1. Introduction
Obstructive parturition has immense economic impact. This may not only lead to loss of calf but may also cause postpartum complications viz. delayed involution, postpartum infections, postpartum anestrous, irreparable damages to the birth canal or in extreme cases loss of the dam. The consequences are numerous and wide spread but early intervention definitely prevents or reduces the chances of occurrence of these complications. Therefore, close monitoring is desirable around parturition. There are numerous causes of obstructive parturition which have been classified as maternal and fetal or a combination of both. Uterine torsion is one of the severest forms of maternal dystocia leading to loss of calf or dam or both, if there is any delay in diagnosis and/or appropriate intervention. Uterine torsion is defined as a revolution or twisting of the uterus along its longitudinal axis (Roberts, 1986). It is described as the rotation of the uterine arc on its transverse axis, similar to an intestinal volvulus. Therefore, understanding the cause, symptoms, and treatment of uterine torsion is imperative for any large animal practitioner.

2. Causes
The cause of uterine torsion is obscure. However, many predisposing factors have been incriminated to be responsible for precipitating the condition. These factors may be classified as maternal or fetal (Ghuman, 2010). The maternal factors include; attachment of broad ligament, musculature of broad ligament, enlargement and location of gravid horn, unfilled rumen, sudden movements of dam, body frame of dam, type of housing, wallowing and decreased uterine tone whereas fetal factors may be; birth weight and sex of calf, presentation of fetus, reduced amount of amniotic fluids and energetic movements of the fetus during first stage labor. Since majority of the cases are reported at first stage of labor or during early second stage, the possibility of the fetus being the predisposing cause cannot be ignored. Occasionally, uterine torsion has also been detected between 5-8 months of gestation and beyond.

3. Clinical Signs
The degree of torsion plays a major role in the severity of the signs. Clinical signs may not be present in torsions of less than 180°. The frequently reported signs include: Tachypnea and tachycardia, straining, anorexia and decreased rumen activity, constipation, restlessness, abdominal pain, dehydration in delayed cases. The initial manifestation is abdominal pain. All the sign of parturition may be evident at advanced gestation. There is abdominal straining but no progress to second stage of labor. Most of the times animal receives symptomatic treatment and the pain reduces. However, the signs of parturition progressively disappear.
3.1 Venous Drainage and Arterial Perfusion Impairment

As the uterus is twisted the broad ligament are also stretched and middle uterine vein is compressed. The extent of compression and the subsequent damage is proportional to the degree of rotation. Initially there is edema of the uterus followed by hypoxia, ischemia, cyanosis and resultant necrosis of the uterine tissue. This leads to cell death, loss of elasticity and the uterus becomes prone to rupture. Inflammation progresses and there is invasion by the pathogens. The inflammatory changes subsequently lead to adhesions of uterine wall to initially omentum and subsequently surrounding organs and even peritoneal wall. Ultimately, delay in correction of uterine torsion causes death of the dam due to generalized bacteremia, endotoxemia or cardiovascular failure (Roberts, 1986). Presence of blood clots or discoloration of allantoic and/or amniotic fluids indicates haemorrhage. It may be presumed that at the time of occurrence of torsion, the axis of rotation of uterus, cotyledons/placental attachments, membranes and fetus may be to a variable degree. This variation may lead to separation of some of the placentomes which may cause haemorrhages.

3.2 Changes in the Cervix

The cervix is invariably twisted/involved both whether the torsion is pre or post cervical. Depending upon the degree and duration of torsion variable extent of damage occurs to the cervical musculature. The changes occurring in the cervix of torsion affected buffaloes have been extensively studied (Singla et al., 1989; Honparkhe et al., 2009). The viscoelastic properties of cervix are affected due to variable extent of damage to the cervical tissue. The time lapse between occurrence of torsion and its detection and/or management and degree of rotation is critical. If the case is detected early, the cervix may either be open or may open within few hours after detorsion. However in delayed cases efforts to achieve effective dilation of cervix usually fail. Even if the cervix is dilated, it becomes prone to rupture. Subsequently, there is delayed cervical involution post partum or in extreme case cervical fibrosis may follow which may render the animal infertile or sterile.

3.3 Biochemical Alterations

Various blood biochemical changes have been recorded in torsion affected buffaloes which may help determining the prognosis as well as rationalizing the treatment to be adopted to improve success rates post treatment. A complete blood count often reveals a normocytic normochromic anemia. Leukocytosis with neutrophilia and monocytosis may also be noted. If serum biochemistry is performed, changes in serum levels of AST, LDH (indicating altered hepatic functions) changes in urea and creatinine (indicating renal impairment) may be observed. Hypoprotenemia and hypoglycemia has also been observed. In Egyptian Buffalos, hormonal analysis revealed a significant increase in progesterone and cortisol levels in association with decreased estradiol levels (Amer and Hashem, 2008). One of the critically important changes recorded include persistently elevated plasma cortisol during post detorsion period, this suggests continued stress which is detrimental for dam survivability.

4. Diagnosis

The diagnosis is based on history, clinical signs, vaginal and rectal examinations. The history, though not always reliable, is critical for deciding the rational line of treatment. The time lapse between occurrence of torsion and its report to the veterinarian, details of treatment previously instituted, stage of gestation and any evidence of tympany should always be considered. It is important to critically examine changes in the udder, pelvic ligament relaxation, perineal edema and other signs of calving.

The diagnosis can be achieved after per vaginal and per rectal examinations. The per vaginal examination should be done first. Care should be taken to minimize contamination during vaginal examination. The direction of rotation (right or left), location of twist (pre or post cervical) and approximate degree of rotation should be determined. Whereas the per-vaginal examination confirms post-cervical uterine torsion, the rectal examination can establish both pre and post cervical torsion by palpating the altered orientation of broad ligaments or presence of twist on the cervix. In majority of animals the post cervical torsion is encountered and the uterus predominantly rotates towards right side in cattle (Bos indicus) and buffaloes (Bubalus bubalis) (Prabhakar et al., 1994).

5. Treatment

Though, many treatment methods have been suggested for management of uterine torsion like vaginal rotation of the fetus, rolling of dam, Schaffer’s method or its further modification specially advocated in buffaloes (Sharma’s modified Schaffer’s method; Singh and Nanda, 1996), laparotomy and caesarean section, the success rates are variable (Ghuman, 2010). The clinical evaluation can be effectively used as tool to decide the appropriate corrective measure. In general, if all the signs of parturition are evident and the animal is presented for treatment early, Schaffer’s method (Sharma’s modified Schaffer’s method) of rolling the dam should invariably be the treatment of choice provided the animal has not developed tympany. The success rates of detorsion after rolling of the dam—
Fig 1: Position of plank in the recumbent cow for correction of an antclockwise uterine torsion (Faria and Simões, 2015).

Fig 2: Diagrammatic representation of Sharma’s modified Schaffer’s method for uterine detorsion of buffaloes. (A) Three assistants are standing on the lower end of plank and another assistant is ready to press the upper end of plank, B) and C) while the buffalo is being rolled, two assistants fix the lower end of plank, one assistant moves upon the plank and other assistant modulates the pressure on the plank by pressing the upper end of plank (Ghuman, 2010).

Depend upon the location, degree and the duration of torsion (Prabhakar et al., 1997). Using this method the detorsion rates up to 90 percent have been reported in Indian buffaloes (Singh and Nanda, 1996). The number of rolls required to achieve successful detorsion may vary with the degree of rotation. However, it has been suggested that the survival rates are maximum if the number of rolls are limited (less than equal to 3). The method is advantageous as per-vaginal delivery can be effected and there is minimum compromise with post-partum fertility. There should be judicious application of the pressure while rolling as the increased intra-abdominal pressure can lead to regurgitation, predisposing uterus to rupture and haemorrhages. In delayed cases the status of udder and ligaments should be carefully monitored as in the cases delayed tentatively more than 36-48 hrs or in cases with higher degree of rotation, though the detorsion may be achieved, the cervix either fails to dilate despite any treatment or fetal emphysema sets in, necessitating caesarean. When the torsion occurs during late gestation (5-8 months), much before the initiation of parturition, though detorsion may be achieved but fetal survival or cervical dilation following induction is questionable. It would be more appropriate to resort to caesarean section under these circumstances. In long standing cases pathological changes in the uterus set in and adhesions of uterus with omentum and surrounding viscera takes place, in such cases caesarean section is the treatment of choice.

6. Conclusion

Based on published data it appears that uterine torsion is the single largest cause of dystocia in buffaloes during terminal gestation. It appears to originate because of inherently weaker broad ligaments, smaller quantity of fetal fluids and decrease in uterine tone and size coupled with inordinate fetal movements. Liver and kidney function tests can prognosticate the outcome of uterine torsion and early presentation to referral centers culminate in successful management of the condition with high dam and fetal survival.

References


