Unusual Incidence of Uterine Torsion In A Cross-Bred Malabari Goat And Its Successful Management Through Caesarean Section

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Abstract- *Torsion of uterus is defined as twisting or revolution of uterus on its own long axis, occurring as a complication of first stage or early second stage labour. It is probably due to the instability of bovine uterus,which results from the greater curvature of the organ being dorsal and the uterus being disposed cranially to its subileal suspension by the broad ligaments. A one-year-old full term pregnant crossbred Malabari goatwas presented with a history of constant straining since yesterday with no progression in parturition. Based on per vaginal examination the case was diagnosed as left sided uterine torsion. As, the efforts to correct the uterine torsion failed, it was decided to perform caesarean section via left lower abdominal celiotomy under local anesthesia to relieve the dead foetus. The animal showed uneventful recovery after the five-day course of antibiotics along with other supportive therapy and suture removal was done after 10days. The animal made an uneventful recovery.*

Keywords- Torsion, Uterus, Malabari goat, Caesarean Section, Left Lower Abdominal Celiotomy

I. INTRODUCTION

Torsion of uterus is defined as twisting or revolution of uterus on its own long axis. It is also called as uterine torsion, uterinevolvulus, contorsio uteri. It is common in cow and buffalo, occasionally in mare, doe, bitch and sow. Uterine torsion is a complication of first stage or early second stage labour. About 90% are observed only at parturition. It is probably due to the instability of bovine uterus,which results from the greater curvature of the organ being dorsal and the uterus being disposed cranially to its subileal suspension by the broad ligaments. The precipitating parturient factor is probably the violent foetal movements that occur in response to the increasing frequency and amplitude of uterine contractions during first stage of parturition. Excessive foetal weight and loss of foetal fluid are some other predisposing factors. Sometimes torsion is also associated with hydrallantois and non-gravid uterus containing pus. The presence of bicornually disposed bovine twins would appear to stabilize the parturient uterus, and this view is supported by the great rarity of torsion in twin pregnancy. However, in ewes the anatomical attachment of the mesometrium is sublumbar rather than subileal as in cattle and bicornual gestation is very common, yet uterine torsion occurs.

Torsion may occur in two opposite directions; left lateral or right lateral. Ritcher and Gotze(1960) recorded 60-70% right torsion may be due to presence of rumen on left side. In cows 90° or 180° torsions are more common. Based on the site of torsion it can be post-cervical or pre-cervical, the former being the most common. Mild degree torsions lack clinical manifestations. If torsion is 180° or more, symptoms of abdominal pain, anorexia, lack of rumination can be appreciated. Diagnosis of torsion is readily made by palpating a stenosed anterior vagina, whose walls are disposed in oblique spiral folds or rugae that indicate the direction of torsion. The number of folds or rugae is suggestive of degree of torsion.

The routine treatment is rotating uterus back to its physiological position. Direct and indirect methods of detorsion are available and are used in accordance with clinical cases, in order deliver kid through vaginal delivery or caesarean section. The surgical treatment of uterine torsion by laparohysterotomy present numerous inconveniences including risk of infections, damage to internal organs, and haemorrhage as well as needing more time for recovery. The non-surgicaltreatment by ‘rolling method’ is one of the most popular method of detorsion. Nevertheless,as the severity of torsion increases, the success rate of rolling method and delivering live foetus are decreased. Rotation of foetus and uterus pervaginum is also a non-surgical correction method.

II. REVIEW OF LITERATURE

Uterine torsion, first reported in 1766 by Boutrolle, is rotation of the pregnant uterus on its longitudinal axis (Fleming, 1930). Rotation of uterus on its longitudinal axis is mostcommonly found in cattle and buffalo, once in a while in doe and ewe and seldom in mare,bitch and sow (Morrow, 1986).In bovines, torsion of the pregnant horn in front of intercornual ligament without the involvement of uterine body or non- pregnant horn is rarely encountered (Matthijsen and Putker, 1989, Dhaliwal *et al*., 1993).Out of the domestic species mentioned, torsion is limited to a uterine horn or a part of the horn in bitch and queen, whereas in the remaining, torsion is of the uterine body (Berchtold and Rüsch, 1993, Prabhakar *et al*., 1995 and Barrand, 2009).In goats the incidence of uterine torsion is lower because themesometrium is attached with sub-lumbar region as compared to cattle where with sub-ilial(Frazer and Perkins, 1996).Most torsion occursduring the later phase of first stage or the early phase of second stage of parturition (Roberts,1996).Revolution of the pregnant uterus on its longitudinal axis leads to narrowing of cephalic portion of the vagina is the major obstetrical disorder of bovines and rare in the ewes (Arthur*et al*., 2001), possibly due to less veterinary involvement in dystocia cases.Uterine torsion signifies the rotation of uterus on its longitudinal axis, with twisting of anterior vagina (Noakes *et al*., 2001).Uterine torsion is more dangerous to dam as well as foetus, if the degree is 180° or more.(Roberts, 2004).In small ruminants, maternal dystocia due to uterine torsion is occasional and accounts for 2% of etiological factors (Jackson, 2004).Uterine torsion was managed successfully either surgically by caesarean section (Phogat *et al*., 2007) or non-surgicallyby rolling of the dam (Manokaran *et al*., 2014).The incidence of uterine torsion is very rare in the goat due to frequent bicornual pregnancy and mainly occurred because of immediate predisposing factors like falling, rolling, lack of exercise during gestation, loss of foetal fluids, movement of animal up and down on the hills etc. It may be due to single foetus in monocornual pregnancy (Dushyant Yadav *et al*., 2018).

III. MATERIALS AND METHODS

A one-year-old full term pregnant crossbred Malabari goat (Fig 1) was presented to the Veterinary Polyclinic, Ottapalam, Kerala, Indiawith a history of constant straining since yesterday with no progression in parturition. Based on pervaginal examination the case was diagnosed as uterine torsion. Efforts to correct the uterine torsion failed.Hence it was decided to perform Caesarean section.

CASE DESCRIPTION

Signalment

Animal	Species	Breed	Sex	Age	Parity
Goat	Caprine	Crossbred Malabari	Female	1year	K 0

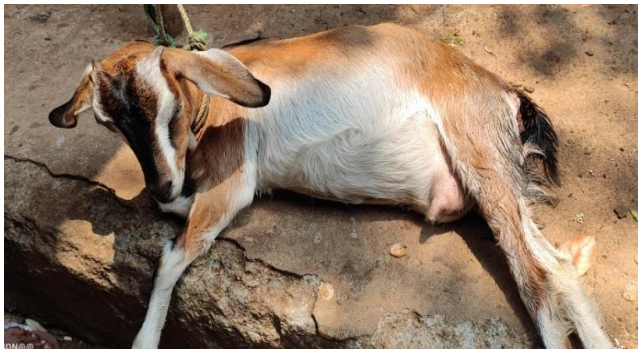

Fig 1.Full term pregnant crossbred Malabari goat

Anamnesis

Present history: Animal exhibited the signs of straining since yesterday. Foul smelling discharge from vulvacould be noticed.

Past history: The owner was unaware of the breeding history.

Physical examination

Temperature: 102.5°F
Mucous membrane: pale
Pulse: 72/min
Respiration: 32/min

Clinico-gynaecological examination

The foetal extremities could not be appreciated externally. The perineal and vulval region was prepared by scrub using potassium permanganate lotion. Per vaginal examination was then performed using a lubricated sterile obstetrical sleeved hand and it revealed left side twist of cranial vaginal mucosa which is the indicative of left sided uterine torsion.

Treatment

On per vaginal examination left sided uterine torsion could be detected. Rolling of dam towards the left side was performed for relieving torsion. Even after several attempts the torsion could not be relieved; so vaginal delivery was not possible.Hence the dam was prepared for caesarean section.

Surgical procedure

Surgical approach: left lower abdominal celiotomy

Surgical anatomy

The structures to be incised include skin, sub cutis, external abdominal oblique muscle, internal abdominal oblique muscle, transverse abdominis muscle, peritoneum and gravid uterine horn.

Site of surgery

Lower flank, midway between the last rib and external iliac vein.

Preparation of surgical site

The animal was restrained in right lateral recumbency. Left lower flank region was prepared aseptically for surgery and painted with povidone iodine and draped. Site of incision was again smeared with the tincture iodine just before the incision was made.

Anaesthesia

Performed local infiltration anaesthesia (inverted L-block) on the left flank using Lignocaine hydrochloride 2% (Fig 2).

Surgical Technique

An oblique skin incision of about 7 cm was made on left flank midway between the last rib and iliac crest extending from 5 inch below the lumbar vertebrae to 1 inch above the mammary vein (Fig 3). Minor haemorrhages were controlled through ligation. The fascia was separated by digital manipulation. Muscle bundle were bluntly separated and peritoneum was exposed. Parietal peritoneal layer was held raised and a stab incision made in it was extended along the incision line with scissors. The gravid uterus was identified and made an incision (Fig 4). The dead foetus was removed from the uterus (Fig 6). Uterine fluid was removed and washed the uterus and abdomen with normal saline and metronidazole solution.

The incision on the uterus was closed using double layer of inversion sutures – Cushing's followed by Lembert's using 2-0 vicryl (Fig 7). After ensuring that there is no seepage of luminal content into peritoneal cavity, the uterus was reverted to its original position. Peritoneum along with muscle layers was sutured using size 1-0 vicryl in a simple continuous pattern (Fig 8). The sub cutaneous tissue was also sutured with size 1-0 vicryl in continuous pattern. The skin was apposed using nylon by simple interrupted suture pattern (Fig 9). A thin layer of cotton dipped in tincture benzoin was applied over the closed skin wound (Fig 10). The owner was advised to present the animal for post-operative therapy.

Post-operative care

Given,
Inj. Normal saline 500ml×1 bottle
Sig 300 ml i/v
Inj. Amoxirum forte 300mg ×1vial
Aqua dist add 5ml
Sig 5ml i/v
Inj. Metrogyl 100ml× 1 bottle
Sig 100ml i/v
Inj. Melonex 30ml×1vial
Sig 1ml i/m
Inj. Tetanus Toxoid 0.5ml × 1 amp
Sig 0.5ml i/m

Continued the antibiotic therapy for four more days.

Fig 2. Preparation of surgical site- painted with povidone iodine

Fig 3. Local infiltration of lignocaine hydrochloride 2% -"Inverted L block"

Fig 4. Oblique skin incision put on the lower left abdominal wall

Fig 5. Explored the abdominal cavity and identified the gravid uterus

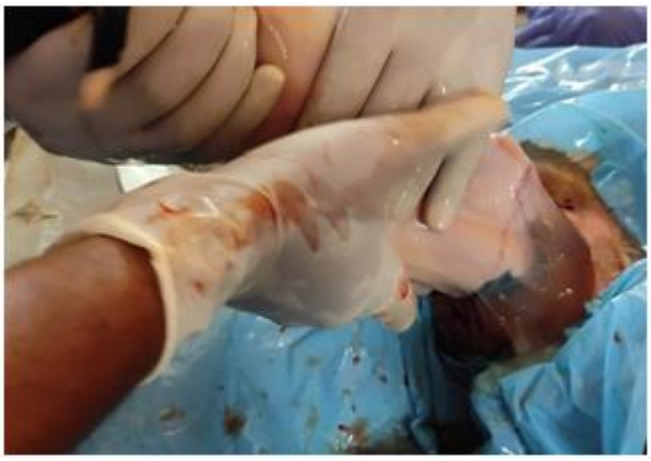

Fig 6. Expelled the dead foetus by careful traction

Fig 7.The dead foetus

Fig 8. Uterine musculature was closed in Cushing's followed by Lembert's suture pattern using vicryl size 2-0

Fig 9. Muscle layers was closed in simple continuous pattern using vicryl size 1-0

Fig 10. Apposed the skin with simple interrupted pattern using monofilament nylon

Fig 11. Cotton dipped in tincture benzoin was applied over the closed skin wound

IV. RESULT

Fig 12. The goat after suture removal

The animal showed uneventful recovery after the five-day course of antibiotics along with other supportive therapy and suture removal was done after 10days. (Fig 12).

V. DISCUSSION

Torsion of the uterus is a cause of dystocia in all domestic species.It is most common in buffaloes, relatively common in cattle, and relatively rare in other domestic animals. Differences in prevalence between species are considered to reflect differences in the mesenteric suspension and the musculature of the uterus. In the sow, bitch, and queen, torsion is usually of either a single uterine horn, or part of a horn, whereas in other species, the entire uterus rotates along its longitudinal axis.

Etiology

Uterine torsion is a complication of late first stage or early second stage labour, although nearly all cases occur during first stage labour. The bovine uterus is predisposed to torsion because of: (i) the attachment of the broad ligament along the lesser (ventral) curvature of the uterus, which thereby leaves the greater (dorsal) curvature free; (ii) the subilial attachment of the broad ligaments; but a lower prevalence in the sheep and doe compared with the cow may be related to differences of the anatomy of the broad ligament, whose attachment is sublumbar in the ewe rather than subileal as in cattle; it is therefore postulated that the pregnant uterus of the ewe would be less unstable than that of the cow. The final factor which allows the uterus to rotate about its longitudinal axis occurs when the cow is attempting to rise to her feet from sternal recumbency, particularly when she is in a confined space.

Clinical signs

The clinical signs closely resemble uterine torsion in cattle but, because of the smaller size of sheep and goats, it is much more difficult to insert a hand into the constricted vagina.Most common sign is a failure of normal progression of labour (Lyons & Gordon 2013), and the period of restlessness is either abnormally protracted or it wanes and does not progress into second stage labour.

In the typical case, the only real symptom is that the period of restlessness is abnormally protracted or that it wanes and does not progress into second-stage labour. If the torsion does not occur until early second-stage labour, then a short period of straining will have followed the restlessness, but will have ceased abruptly. In severe cases of torsion there may be increasing restlessness, but more probably all parturient behaviour will cease and, unless the animal has been closely observed, there may be no knowledge that parturition has begun. Pearson (1971) has noted slight depression of the lumbosacral spine as a frequent symptom. In the study by Frazer(1996), there was pyrexia (23%), tachycardia (93%), tachypnoea (84%), straining (23%), anorexia (18%) and a vaginal discharge (13%). If the condition is unrelieved, the placenta will separate and the foetus will die. It will develop persistent low-grade abdominal pain, progressive anorexia and

constipation. Because the foetal membranes often remain intact, secondary bacterial infection of the foetus will develop later than with other forms of dystocia.The severity of the twist does not directly affect the survival of the foetus, foetal death being caused by loss of foetal fluids or separation of the placenta.

Diagnosis

Diagnosis is readily made by palpating the stenosed anterior vagina, whose walls are usually disposed in oblique spirals which indicate the direction of the uterine rotation. Mild torsions may be confused with incomplete cervical dilation (Scott, 2011). Although rectal and vaginal examination is not a practical technique for the diagnosis of torsion in small ruminants, ultrasonography is an efficient technique that fills the lacunae in diagnosis of torsion due to their anatomical peculiarities. Transabdominal ultrasonography can be used effectively in ewes via comparing the thickness of uterine wall. The probe should be placed immediately cranial to the pelvic brim, with the probe head directed vertically (Scott, 2012). The oedema of the uterine wall results in gross thickening of its ultrasonographic appearance. Prominent edema of uterine wall is associated with torsion that increases its width. The thickness of the uterine wall affected with torsion (10 mm) is twice that of normal physiologic width (5 mm) of uterine wall (Wehrend *et al*., 2002).

Treatment

There are various ways of treating the condition. The ewe or doe can be given caudal epidural anaesthesia (and maybe also clenbuterol) and with the hindlimbs held so that the animal is almost vertical, a relatively modest rotatory force on a fetal appendage or a rotatory movement of the dam's body is usually sufficient to correct the torsion. Rolling, with a modification of Schaffer's method for the smaller body mass of the ewe, has been described as a means of managing uterine torsion (Kumar *et al*. 2016, Teja *et al*. 2017, Velladurai *et al*. 2017). If these methods fail then Caesarean section must be undertaken. Long-standing torsions can become impossible to resolve without resorting to surgery because of the development of adhesions between the uterus and other abdominal viscera.

In modified Schaffer's method, a plank is kept on the flank area of the abdomen of the animal kept on lateral recumbency so that the uterus is fixed at that particular position. Then the animal will then be rotated to the side of torsion, this is repeated till the uterus comes back to the normal position. Detorsion of the uterus can also be done by rolling the animal towards the side of torsion after holding the cervical folds pervaginally so that uterus is stabilized during the time of rolling (Yadav *et al*., 2018). The latter technique tends to be more superior to the modified Schaffer's method. Compared to post-cervical uterine torsion, the diagnosis of pre-cervical torsion is more difficult in the small ruminants, and they can be identified mostly during operation or post-mortem examination (Phogat *et al*., 2007). Ali *et al*. (2011) reported the diagnosis of pre-cervical uterine torsion in three ewes and two does during caesarean section for the management of dystocia due to ring womb. Post-cervical uterine torsion is diagnosed based on examination of the vaginal fold pervaginally in goats (Sharma *et al*., 1992; Sood *et al*., 2002).

Caesarean section is considered as the only treatment option when per-vaginal delivery of foetus is not possible. Early surgical intervention by Caesarean section can improve the outcome of obstetrical emergency. Causes of dystocia like incomplete cervical dilatation/ring womb, irreducible malpresentation, foetopelvic disparity, foetal emphysema and monsters has to be managed by Caesarean section (Thomas, 1990; Winter, 1999; Kumar *et al*., 2013). Several hematological parameters were evaluated as a prognostic indicator of the outcome of Caesarean section, but failed to identify any (Scott, 1989). The mortality rate of foetus involved in dystocia will be greater as time between the onset of labor and the external intervention to provide care to the foetus increases. Caesarean section in small ruminants is easier to performwhen compared to large ruminants. Different approaches are used for performing Caesarean section, which include left flank, ventral midline and ventral paramedian approach (Smith, 2008). The site and technique of Caesarean section in small ruminants is similar to that of large ruminants. Abubakar *et al*., 2014 evaluated the two approaches of laparotomy (flank and mid- ventral) in goats and found out that mid-ventral laparotomy approach is superior compared to the flank approach. Mid-ventral approach is superior due to less intra- and post-operative clinical complication, less intra-operative haemorrhage and post-operative tissue reactions. But the study was conducted in non- pregnant goats and hence it might not be applicable in pregnant animals. A similar study was conducted in sheep affected with dystocia, in which comparison was done between the laparotomy performed either via left flank incision or by ventral mid-line approach. The findings were similar to Abubakar *et al*., 2014 and reported that the laparotomy by ventral mid-line approach is superiorto the left flank method due to decreased healing disorders associated with laparotomy. Even though ventral mid-line approach is the superior technique, it requires general anesthesia and the animal has to be placed in dorsal recumbency for facilitating the surgery. This is practically

difficult in farm conditions along with the added risk of general anesthesia in already compromised animals. General anesthesia may be detrimental if the foetus is alive. Even though ventral mid line approach has many advantages, the left flank approach is the preferred technique under field conditions. The anaesthetic technique used in Caesarean section involves local infiltration of lignocaine hydrochloride as line block,or inverted'L' block in cases where left para-lumbar fossa approach is used. Lumbosacral epidural can be combined with or without sedation for effective analgesia during Caesarean section.

VII. SUMMARY

The goat was presented in Veterinary Polyclinic, Ottapalam, Kerala, India with the complaint that animal is not progressing into parturition. On clinico-gynaecological examination revealed it was uterine torsion. Since detorsion of uterus by rolling of dam was unsuccessful it was decided to perform Caesarean section. The surgery was performed under local anesthesia to relieve the dead foetus.Post-operative care was provided with antibiotics and supportive therapy for five days. The animal had an uneventful recovery.

REFERENCES

[1] Abubakar, A. A., Andeshi, R. A., Yakubu, A. S., Lawal, F. M. and Adamu, U. 2014. Comparative Evaluation of Midventral and Flank Laparotomy Approaches in Goat. *J. Vet. Med*. 2014: 1-6.

[2] Adams, N. R. and Nairn, M. E. 1983. The nature of dystocia in ewes after grazing oestrogenic subterranean clover. *Australian Vet. J*. 60: 124-125

[3] Arthur, G.H., Noakes, D.E., Pearson, H. and Parkinson, T.J. Veterinary Reproduction and Obstetrics, 2001 (Ed 8th), WB Saunders Company Ltd., London, 237-238,

[4] Barrand, K. R. 2009. Unilateral uterine torsion associated with haematometra and cystic endometrial hyperplasia in a bitch. *Vet. Record.*164: 19–20.

[5] Berchtold, M. and Rüsch, P. 1993. Birth interference from the mother. Animal obstetrics. pp. 222–44.

[6] Biswal, S. S., Balasubramanian, S., Das, A. K.,Umamageswari, J. and Cecilia, J. 2015. Correction ofUterine Torsion Using Modified Schaffer's Method in aGoat. *Int. J. Livest. Res.* 5: 36-38.

[7] Dhaliwal, G. S., Prabhakar, S. and Sharma, R. D. 1993. Torsion of pregnant horn in a cow—A case report. *Indian J. Ani. Reprod.* 14: 129.

[8] Dushyant Yadav, Rupali Rautela, Brijesh Kumar, Rahul Katiyar, A.R. Mustapha, G.K. Das, K. Narayanan and Harendra Kumar. 2018. *Bull. Env. Pharmacol. Life Sci*. 7: 96-97.

[9] Fazer, G.S., Perkins, N.R. and Constable, P.D. 1996. Bovine uterine torsion: 164 hospital referral cases. Theriogenology. 46: 739-758.

[10] Fleming, G. 1930. Fleming's Veterinary Obstetrics. pp. 235–50.

[11] Jackson, P.G.G. 2004. Hand book of veterinary obstetrics. W.B. Saunders Co. Philadelphia. pp. 5.

[12] Khan, S., Satheesh, A., Sabarinadh, V.R., Ranjith Mohan, M., Sidhique, S.A., Panikkassery, S. 2018. Surgical management of dystocia due to uterine adhesion in a goat. *J. Entomol. Zool. Stud*. 6: 988-991.

[13] Kumar, V., Talekar, S.H., Ahmad, R.A., Mathew, D.D. andZama, M.M.S. 2013. Delayed cases of dystocia in small ruminants-etiology and surgical management. *Indian J. Vet. Sci.* 1: 47-54.

[14] Kumar, B., Yadav, D. and Saxena, A. 2016. Schistosomus Reflexus in a Goat–A Case Report. *Theriogenology Insight*. 6: 119

[15] Manokaran, S., Palanisamy, M., Selvaraju, M. and Napolean, R. E 2014. Successful treatment of post cervical uterine torsion in a ewe. Shanlax *Int. J. Vet. Sci.*2014; 2:40-41.

[16] Matthijsen, H. F. and Putker, P. H. 1989. Post-partum torsion of the right uterus horn in a cow. *Tijdschrift voor diergeneeskunde* 114: 17–19.

[17] Morrow, D.A., 1986, "Current Therapy in Theriogenology," (1stEd.) WB Saunders company, pp. 864-865.

[18] Noakes, D.E., Parkinson, D.J. and England, G.C. 2001. Maternal dystocias. *Arthurs veterinary reproduction and obstetrics* (8th Ed.) Noakes D. E. Saunders Harcourt India,884p.

[19] Noakes, D.E.,Parkinson, T.J., and England, G.C.W.2009.*Vet.Reprod. Obstet.*9: 207-305.

[20] Phillip, P.J., Nayer, K.N.M., Nayer, S.R., Varkey, C.A., Amma, T.A. and Rajankutty, K. 1985. Caesarean section in goats: A clinical study. *Ind. J. Vet. Surg*. 6: 41.

[21] Phogat, J.B., Behl, S.M., Singh, U. and Singh, P.2007. Uterine torsion in sheep: a case report. Haryana *Vet*. 46:110-111.

[22] Prabhakar, S., Dhaliwal, G. S., Sharma, R. D. and Nanda, A. S. 1995. Success of treatment in relation to milk letdown and pelvic relaxation in bovines with torsion of uterus. *Indian J. DairySci.* 48: 323–25.

[23] Richter, J., and Götze, R., 1960. *Tiergeburtshilfe*. (Veterinary Obstectrics).Veri. Parey Berlin.

[24] Roberts, S.J. 2004.*Veterinary obstetrics and genital diseases (Theriogenology*), (2nd Ed), CBS Publication and Distributors Pvt. Ltd., New Delhi, 186.

[25] Scott, P. R. 1989. Ovine caesarean operations: a study of 137 field cases. *BritishVet. J.* 145: 558-564.

[26] Scott, P. 2011. Uterine torsion in the ewe. *UKVet. Livest.* 16: 37-39.
[27] Scott, P. R. 2012. Applications of diagnostic ultrasonography in small ruminant reproductive management. *Ani. Reprod. Sci.* 130: 184-186.
[28] Sharma, A., Kumar, P., Singh, M. and Vasishta, N. 2014.Retrospective analysis of dystocia in smallruminants. *Intas Polivet* 15: 287-290.
[29] Sharma, A., Singh, M., Kumar, P. and Gupta, S. 2018.Management of uterine torsion in a goat by modifiedSchaffer's method. *J. Bio Innovation* 7: 753-755
[30] Sharma, R.D., Prabhakar, S., Brar, P.S. and Nanda, A.S. 2014. Evaluating durability of lubricants used in veterinary obstetrics. *Intas Polivet* 15: 183-185.
[31] Sharma, S.K., Dhoble, R.L., Vashista, N.K. and Singh, M. 1992. Uterine torsion in a goat. *Indian Vet. J.* 69: 864-865.
[32] Thomas, J. O. 1990. Survey of the causes of dystocia in sheep. *Vet. Rec*. 127: 574-575.
[33] Wehrend, A., Bostedt, H. and Burkhardt, E. 2002. The use of trans-abdominal B mode ultrasonography to diagnose intra-partum uterine torsion in the ewe. 164: 69-70.