

CHAPTER I

Introduction

Eutocia is normal physiological parturition. However, the term dystocia means difficult birth. When the 1st or especially the second stage of parturition is markedly prolonged or becomes difficult or impossible for the dam to deliver without artificial aid, the condition is termed as dystocia. The first stage usually starts when the animal isolates itself from the rest of the herd, shows signs of restlessness, and loss of appetite. Forceful abdominal contractions become stronger and more frequent toward the end of this stage. The second stage of parturition marks the expulsion of the fetus which usually occurs within 15-30 minutes. The incidence of dystocia in goats and sheeps together has been reported from 2.2% to 4.4% (Scott, 1989; Thomas, 1992; Brounts *et al.*, 2004). In sheep, the figures as low as 3% to as high as 34% have been reported (George, 1976; Osuagwuh, 1980; Jackson, 1995), while in goats, 8.23% dystocia was recorded (Mehta *et al.*, 2002).

Dystocia in small ruminants can be caused by either maternal or fetal factors. In a study involving 70 sheep and goats suffering from dystocia, the highest prevalence was recorded in primiparous females, during the winter season and in dams carrying large male fetuses. Fetal related causes of dystocia were far more represented in the case population compared to maternal causes (54% vs. 37%). The most common fetal-related causes of dystocia were head deviation, forelimb flexion, breech presentation, dog sitting position and fetal malformations. Maternal causes were mostly associated with failure of cervical dilation or ringwomb (Bhattacharyya *et al.*, 2015).

Congenital abnormalities may cause obstetrical problems or dystocia. Congenital abnormalities are abnormalities that are present at birth. They may be caused by genetic factors or some other agent. A teratogen is an agent that can induce abnormalities in a developing conceptus. Teratogenic agents may not kill the developing conceptus, but many of the abnormalities they induce are compatible with life.

The effects of dystocia on the profitability of goat enterprises are not extensive compared than large dairy animals. The losses will be largely restricted to the increased incidence of kid mortality. Faulty fetal disposition can cause dystocia, it was reported that 94.5% of presentations were anterior longitudinal and only 3.6% were posterior. The commonest faulty disposition was unilateral flexion of one forelimb; if the lamb is small, this may not result in dystocia. The facility with which faulty fetal disposition can be corrected will depend in large measure on the operator's ability to pass a hand through the pelvis into the uterus.

Schistosomus reflexus (SR) is a rare and fatal congenital disorder, that is the reason we studied the case. Primarily observed in ruminants and swine, its defining features include spinal

inversion, exposure of the abdominal viscera because of a fissure of the abdominal wall, limb ankylosis, positioning of the limbs adjacent to the skull and, lung and diaphragm hypoplasia. Variable components of SR include scoliosis, cleft sternum, exposure of thoracic viscera, and abnormalities of the digestive and urogenital system.

Many of these malformations have not been previously reported. The reproductive tract of this case is particularly unique, displaying Mullerian duct abnormalities. These abnormalities suggest SR occurs as early as the post-gastrulation embryo and involves the intermediate mesoderm. Preliminary analysis of associated cases suggests that SR has a genetic aetiology. The aetiology is unknown but it may be due to genetic factors, mutation, chromosomal anomalies, infectious agents and environmental factors or combination of all the factors (Noakes *et al.*, 2002). Murine gene mutations producing severe ventral body wall defects associated with anomalies of internal organs and other structures have been implicated in causing this condition (Laughton *et al.*, 2005). This condition can be corrected either by foetotomy or caesarean section, but taking into consideration the welfare of the dam and economy of the farmers, it is better to prefer foetotomy operation over caesarean section to deliver a *Schistosomus reflexus* monster.

Dystocia due to this monster is comparatively rare in goat than in cattle and buffalo (Roberts, 1971). Foetotomy or caesarean section is mandatory for delivery of a fully grown *Schistosomus reflexus* monster while, per-vaginal expulsion without any obstetrical assistance is noticed in small sized monster fetuses (Kalita *et al.*, 2004). A successful per-vaginal management of dystocia due to *Schistosomus reflexus* monster in a doe is placed on record.

CHAPTER II

Materials and Methods

2.1. Case history and observation

An adult doe aging 1.5 years her first lambing at full term of pregnancy as per the owner was presented with the history of straining and unable to undergo the normal physiological process of lambing. The doe was bred by a Black Bengal goat. The owner also complained that the water sac was observed but the doe was not trying to push. Upon clinical examination the doe was found to be dull and depressed (Figure-1) . Respiratory rate and heart rate slightly increased. However rectal temperature was 102.9° F which was within normal range for doe. The visible conjunctival mucous membranes were pink and the doe was slightly dehydrated. The vaccination and deworming status were up-to-date. After taking clinical examination, the excess and dirty hair from around the anus and vulva was clipped. Then the vulva,anus and surrounding areas were cleaned with dilute chlorhexidine, removing all dirt and feces. Per-vaginal examination was done by applying liberal amount of lubricant. The cervix was sufficiently dilated and a deformed fetus was found in the pelvic cavity per-vaginally. On vaginal examination the fetal head was palpated in the cervix. Therefore a tentative diagnosis of dystocia due to fetal deformity was made. On palpation of a normal sized dead *Schistosomus reflexus* fetus in the right horn in anterior presentation and dorso-sacral position.



Figure-1. The affected dull and depressed doe.

2.2. Correction

Since the genital tract was sufficiently relaxed and lubricated, the foetus was delivered per-vaginum by forced traction. The animal was restrained in lateral recumbency (Figure-2) , the female fetus was extracted by forced traction on forelimb and on inner canthus of eye with small animal eye hook. Finally dead fetus was taken out and mother recovered uneventfully with parenteral and intrauterine antibiotic along with supportive therapy.\



Figure-2. Doe placed in lateral recumbency.

2.3. Fetal Description

The fetus weighed approximately 2 kg with grossly normal head with acute angulations of the vertebral column such that hind quarter lied close to the head. The diaphragm was intact and thoracic organs remained inside the thoracic cavity. The abdominal wall was not fully developed and all abdominal viscera remained outside under the cover of thin membrane. The pelvis was deformed severely and was diagnosed to be a case of *Schistosomus reflexus* (Figure-3).



Figure-3. *Schistosomus reflexus* in a lamb showing exposed abdominal viscera.

2.4. Post-operative care

Subsequently, the fetus was pulled out, the uterus of the doe irrigated with 10% Povidon iodine and 2 boluses of Metronidazole (Metrovet®) were placed intra-uterine. Antibiotic (SP vet®@3ml, IM) , Analgesic (Melovet®@1.5ml, IM) , Antihistaminic (Histavet®@1.5ml, IM) were given as post-operative treatment for 7 days. The doe was also supported with fluid therapy as it was dehydrated (Normal saline @300ml,IV). After 15 days, the animal was followed up and found active, alert and taking feed normally.

CHAPTER III

Result

A full term pregnant, primiparous , Black Bengal doe aged about 1.5 years was came with the history of straining and yielding no result. On clinical examination, the animal found dull and depressed , rectal temperature was 102.9° F , respiration rate and heart rate slightly increased and visible mucous membrane were pink. Obstetrical examination revealed all limbs and head lying in birth canal. As the cervix was sufficiently dilated, the female fetus was extracted by forced traction on forelimb and on inner canthus of eye with small animal eye hook. Finally the dead fetus was taken out. The removed fetus was malformed with marked ventral curvature of spine , lateral bending of fetal body and chest wall exposing abdominal viscera with deformed pelvis and ankylosis of limbs. The case was diagnosed to be a case of *Schistosomus reflexus*. After delivery of the fetus, the uterus of the doe was irrigated with 10% povidon iodine, intrauterine antibiotic, systemic antibiotic, analgesic and antihistaminic was administered parenterally for 7 days. Uneventful recovery of the dam was noticed after 15 days.



Figure-4. *Schistosomus reflexus* fetus.

CHAPTER IV

Discussion

Schistosomus reflexus (SR) is a common fatal congenital disorder, primarily observed in ruminants. The defining features include spinal inversion either dorsi-flexion or retro-flexion of vertebral column with or without ankylosis, joint contractures or limbs ankylosis and exposure of abdominal and or thoracic viscera owing to severe form of abdominal herniation or fissures on ventral or midventral abdominal wall.

The definitive aetiology of SR remains unclear however chromosomal involvement and exposure to teratogenic agents have been the likely causes of *Schistosomus reflexus*. Majority of congenital anomalies reported to be related to genetic factors, mutations, chromosomal anomalies, infectious agents, and environmental factors or the combination of all the factors listed. Removed fetus that displays both visceral exposure and spinal inversion is considered as a true case of SR.

Scanning through the literatures revealed higher percent of reporting *Schistosomus reflexus* in cattle and buffalo (Padma *et al.*, 1993; Srivastava *et al.*, 1998). Similarly most literatures concerning *Schistosomus reflexus* in goats revealed extrimities presentation (Balaswamy and Narasimhawamy, 1997; Kalita *et al.*, 2004). Hence it assumes to be common in goats compared to visceral presentation.

A case of dystocia in a four years full term pregnant non-descriptive doe in her third parity was presented with the history of labour since 12 hours and clinically the fetal abdominal viscera were protruding out of vulva (D. N. Suthar *et al.*, 2011) which is dissimilar to present case history. However another study, reported that a full term pregnant, pluriparous, non-descriptive doe aged 3 years was attended with the history of straining since last 4 hours, yielding no result and after examination revealed all limbs and head lying in birth canal (Brijesh Kumar *et al.* 2016) , it shows slight similarity with present study.

Dystocia may be corrected by mutation or forced extraction if the condition remain favourable. Otherwise fetotomy or embryotomy of the fetus can be done for the purpose of reducing its size. If fetotomy is not possible, the only way to correct dystocia is Caesarean section.

In a study, Mehraj-U-Din Dar *et al.* (2015) did Caesarean section in a case of true *Schistosomus reflexus* in a ewe was confirmed from physical examination of the defective fetus as there was insufficient room for fetal manipulation. The ewe was under observation for four weeks. However, in the present study there was sufficient room for fetal manipulation, for this reason Caesarean section was not needed to done in the doe. Brijesh Kumar *et al.* (2016) used epidural

anesthesia with 1.5ml of 2% lignocaine between sacro-coccygeal joint of the doe and the fetus was extracted by forced traction on forelimb and on inner canthus of eye with small animal eye hook. In present study, no anesthetic was used during manipulation as the cervix was sufficiently dilated. In another study, successful delivery of *Schistomus reflexus* through C-section in a crossbred doe is reported (K.Ravikumar *et al.* 2013).

Administration of intra-uterine antibiotics, topical antibiotics, analgesic, antihistaminic and fluid therapy is recommended for the doe after correction of the dystocia. In present study the doe was treated by uterine irrigation, intra-uterine antibiotics, topical antibiotics, analgesic, antihistaminic and fluid therapy for 7 days after correction of dystocia which is agreement with several study (D. N. Suthar *et al.*, 2011; K.Ravikumar *et al.* 2013; Brijesh Kumar *et al.* 2016).

Recovery of the animal should be followed up. In the present study, the animal was observed after 15 days and the doe found active, alert and taking feed normally which is similar to another study. They found the animal active and alert 25 day post-operation with 3 kg extra body weight gain (Mehraj-U-Din Dar *et al.* 2015).

CHAPTER V

Conclusion

Schistomus reflexus (SR) is a fatal and rare congenital disorder in goat (Roberts, 1971) and is considered to be a severe form of an abdominal hernia associated with skeletal defects (Dennis and Meyer, 1965). Dystocia due to *Schistomus reflexus* was successfully delivered by forced traction in a doe is reported. Partial foetotomy of the fetal parts is suggested if the spinal curvature is acute and thus preventing passage of the fetus through the birth canal. If fetotomy is not possible, a caesarean operation is the only choice to deliver this kind of monster fetus. Per-vaginal expulsion without any obstetrical assistance is noticed in small sized monster fetus.

CHAPTER VI

References

- Balaswamy. K. and Narasimha Rao. A.V. 1997. Schistosomus reflexus in a kid-case report. Indian J. Anim. Reprod., 18(2): 165
- Dennis, S.M. and Meyer, E.P. 1965. Schistosomus reflexus in sheep. Vet. Rec., 77: 1386
- Kalita, D., Mukit. A. and Islam. D. 2004. Dystocia due to schistosomus reflexus in a goat. Indian J. Anim. Reprod., 61(1): 76-77.
- Padma Rao, V., Ramchandraiah, K., Mohan Reddy, A.R., Venkata Subbiah, D. and Chandrashekhar, B. 1993. Schistosomus reflexus in a monocephalus Tripus Dibrachius calf. Indian Vet. J., 70:1083.
- Roberts, S.J. 1971. In: Veterinary Obstetrics and Genital Disease, 2nd Edit. C.B.S. Publisher and distributors, Delhi, pp. 284-285.
- Srivastava, K.K., Sharma, A.K., Ahlawat, S.P.S. and Maithy, S.K. 1998. Schistosomus reflexus with Perosomus Elumbis in Holstein Freisian Cow. Indian J. Anim. Reprod., 19(1):75.
- Laughton K.W. Fisher K.R. Halina W.G. Partlow G.D. 2005. Schistosomus reflexus syndrome: a heritable defect in ruminants. Anat Histol Embryol., 34:312-318
- D. N. Suthar, V. K. Sharma, V. S. Dabas and D. B. Bhoi 2011. Per-vaginal handling of Schistosomus reflexus as a cause of dystocia in a goat. Vet. world., Vol.4(7):330-331
- Brijesh Kumar, Dushyant Yadav, Vandana and Atul Saxena 2016 . Schistosomus reflexus in a Goat-A case report. Therio. In., 6(3):1-11
- Brounts, S. H., Hawkins, J. F., Baird, A. N., Glickman, L. T. 2004. Outcome and subsequent fertility of sheep and goats undergoing cesarean section because of dystocia: 110 cases(1981-2001). J. Am. Vet. Med. Assoc., 224,275-279
- Bhattacharyya, H. K.,Fazili, M.R., Bhat, F.A., Buchoo, B.A. 2015. Prevalence and dystocia of sheep and goats: A study of 70 cases (2004-2011). J. Adv. Vet. Res., 5,14-20

CHAPTER VII

Brief Biography of the student

Tamanna Nayan Noor is an intern student for the degree of Doctor of Veterinary Medicine (DVM), Faculty of Veterinary Medicine, CVASU. She passed the Secondary School Certificate Examination (SSC) in 2009 from B.N. School and College, Chittagong and got CGPA 5.00 and then Higher Secondary Certificate Examination (HSC) in 2011 from Govt. Hazi Mohammad Mohsin College, Chittagong and got CGPA 5.00. Then she admitted to the degree of Doctor of Veterinary Medicine (DVM), Faculty of Veterinary Medicine, CVASU in 2012-2013 session.