

Chapter I

Introduction

Goats play an important role in livelihoods of smallholder farmers in Bangladesh as they serve as assets to develop the economy. Bangladesh has the second highest population of goat among Asiatic countries which accounts for about 60.60 million heads representing 57% of total ruminant livestock (Husain 1993; Amin et al. 2001). About 25.61 million goats represent the goat population in Bangladesh. Goats are deeply embedded in almost all over Bangladeshi culture and are considered as true friends to the rural people. The old saying that “the goat is the poor man’s cow” still holds true in the majority of developing countries. Goats play a unique role in supporting some of the poorest people in Bangladesh and can play a powerful role in lifting them out of poverty towards prosperity (Amin, 2000). In Chittagong region the rearing of goat is also popular than other livestock. But it was remarkable that the most constraint on goat reproduction in Bangladesh is reproductive disorder such as dystocia.

Dystocia may be of fetal or maternal origin (Noakes *et al.* 2009). Fetal causes of dystocia include mainly oversize, mal-disposition, and monsters (Majeed and Taha 1989a, Noakes *et al.* 2009). Maternal causes of dystocia include mainly incomplete cervical dilatation (ringwomb), narrow pelvis, and uterine torsion (Majeed and Taha 1989b, Thomas 1992, Noakes *et al.* 2009). Uterine torsion is defined as extreme twisting of the uterus on its long axis. The uterus normally rotates along a 90 degree arch and may intermittently move more than that during uneventful gestation. When the gravid (pregnant) uterine horn flips over top of the non-gravid uterine horn causing the uterine to twist 270 degrees or more, the torsion is so abnormal that it cannot be corrected by the animal and the life of the fetus and dam are at risk. (Brounts et al 2004).

C-section refers to a surgical procedure in which an incision is given through the abdominal wall into the abdomen and uterus in order to deliver a kid. Nowadays, the caesarean operation is one of the most common surgical procedures performed by veterinarians in ruminants practice, and is considered as a routine obstetric technique. It has high maternal and fetal survival rates, and often is less exhausting, speedier and safer than fetotomy. The ideal goals of performing a

caesarian section are survival of the dam and kid and management the dystocia. A C-section is often necessary in goat when delivery *per vaginam* too difficult and when all other methods to deliver the fetus naturally have failed, and therefore could endanger the life of the dam or the life of her kid. The goal of performing a caesarean section is also to maintain the future reproductive efficiency of the dam (Vermunt, 2008). Major indications of caesarean section include fetal emphysema, inadequate cervical dilation, uterine torsion, abnormal fetus position, fetal monsters and presence of a dead fetus (Campbell and Fubini, 1990). There are several types of anesthesia techniques used in caesarian section such as distal paravertebral nerve block, line block, field block etc. Each has its own advantages and disadvantages. Selection of one technique is based on the dam's conditions, the availability of the assistance and surgeon's preference. These techniques include the proximal paravertebral nerve block, the distal paravertebral nerve block, the inverted L block and infiltration of the incision or line block. (Edwards, 2001)

Distal paravertebral nerve block is a preferred method of regional anaesthesia in small ruminants for surgical procedures such as Caesarean section, rumenotomy, and correction of gastrointestinal displacement in a standing animal (Edwards, 2001). Advantages of the distal paravertebral nerve block compared with inverted –L block include less amount of anesthesia, injected less amount of area, cost effective and it offers more consistent results. Disadvantages of the distal paravertebral nerve block compared with the inverted-L block include it is tough method to detect the right number vertebrae and time consuming (Edwards, 2001).

The inverted L block is a nonspecific regional block that locally blocks the tissue bordering the caudal aspect of the thirteenth rib and the ventral aspect of the transverse processes of the lumbar vertebrae (Edwards ,2001).Advantages of the inverted L block include that the block is simple to perform, it does not interfere with ambulation, and edema and emphysema possibility is less at incission site. Disadvantages include incomplete analgesia and muscle relaxation of the deeper layers of the abdominal wall (particularly in obese animals); possible toxicity after larger doses of anesthetic; and increased cost because of larger doses of local anesthetic (Edmondson, 2008).

A successful prognosis depends on several factors, such as the skill of the surgeon, duration of dystocia, physical condition of the dam, surgical environment, concurrent disease, and presence of a live kid. (Vidaya,2010).

Objectives:

- 1) Management of dystocia in goat by C-section.
- 2) Comparison of two anaesthesia techniques that are commonly used in C- section

Chapter II

MATERIALS AND METHODS

2.1 .Study area and duration:

The study was carried out in the Shahedul Alam Quadery Teaching Veterinary Hospital (SAQTVH) of Chittagong Veterinary and Animal Sciences University (CVASU).The study period was november 2017 to april 2018 (Six Months).

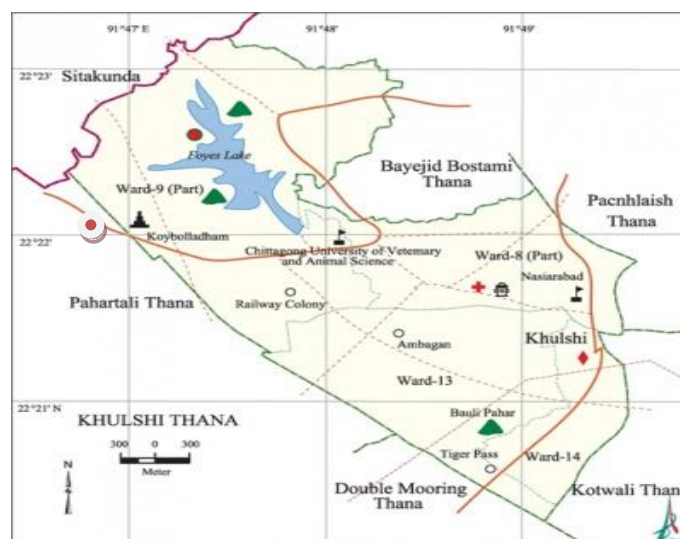


Figure 1: Geographical Location of Study Area

2.2. Study Population:

Nine (n=9) goats of dystocia with an age of 12 to 16 months ,weighing average body weight 13 kg were considered as population in this study. These patients were of two breeds- black Bengal and cross (Black Bengal and Jamunapari) that were admitted to Teaching Veterinary Hospital complaining with not delivered of fetus after completing the gestation period. These nine dystocia patients were divided randomly into two groups of distal paravertebral nerve block and field block.

2.3. Case History:

The goats were brought to the SAQTVH, CVASU with a history of prolonged gestation. Clinical examination of the animal exhibited slight higher temperature, respiration and pulse rate. The behavior of the animal was normal to moderate restless and appetite was not satisfactory. The owner of the goats noted that the dams did not deliver the kids even after 150 days of gestation. Through Per vaginal examination revealed postural and positional defect of the fetus. After failure of manual extraction of fetus, it was decided to perform a cesarean section to deliver the kids.



Figure 2: The condition of the patient before surgery

2.4. Operative Procedure:

2.4.1: Restraining and Anesthesia:

Both physical and chemical methods were used to control the goats. The moderate type of healthy animals was sedated with diazepam (0.4mg/kg body weight; inj. Easium®) and very weak patient were not sedated for restraining. Further, the animals were restrained using a rope in order to limit movement during surgery. After restraining, the animal was prepared for aseptic surgery. The area of the intended incision was clipped, shaved and soaked with povidone iodine (Figure 1). Before clipping local anesthesia using 2% lidocaine hydrochloride (Inj. Jasocaine®) solution was provided by a distal lumbar paravertebral block at the site of transverse process of L₁, L₂ and L₄ and field block.



Figure 3: Distal Paravertebral nerve block

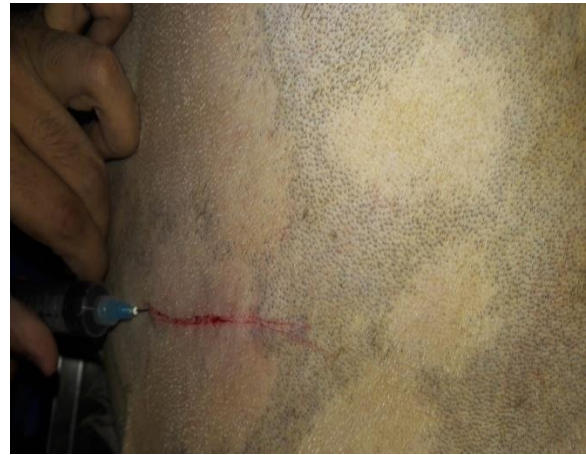


Figure 4: Field block

2.4.2: Surgical procedures:

Left oblique flank approach was used for cesarean section at lateral position. A draper was placed over the area of the site of surgery and a long oblique incision along the skin of the lower flank was made and separated from the subcutaneous layer. The muscles were then incised ligating all the bleeding vessels and proceeded taking care to avoid major blood vessels. Following separation of the muscles by blunt dissection the peritoneum was incised by taking care of underneath organ of peritoneum. After identifying the uterus, incision was given on uterus and leg was pulled up to expel it outside from uterus. The huge amount of amniotic fluid was come out and the kid was removed. The live kids were cared by assistants so that they could breathe normally. The placenta was removed manually in few cases. Before closing the abdominal cavity, the inner surface of uterus and peritoneal cavity were given a good flush with normal saline to prevent contamination. The uterus was closed with natural absorbable suture catgut (size 1), starting well above the incision by using Czerny-Lambert pattern without penetration of the wall. The incised peritoneum and muscle layers were closed with using catgut no. 1 by simple continuous and lock stitch pattern respectively. Subcutaneous suture was performed by using 1-0 catgut and mattress sutures were used for closure of skin by using non-

absorbable suture silk. A Cotton seal was applied over the sutured line by using povidone iodine. The animals were then monitored for a period of 7-10 days to observe any complication until complete healing and follow were continued for two months.

2.5. Post-operative Care:

Postoperative analgesia was provided by administering meloxicam at 0.5 mg/kg intramuscularly, once daily (Inj.loxicum plus®) for 5 days. Strpto-penicilin at 0.5-1 ml/10 kg intramuscularly, (Inj.Strepcin-G®) once daily was administered for 7 days. Phenereamine maleate (Inj.Alerin) at 1-2 mg/kg ,intramuscularly ,once daily (Inj.Alerin®) was administered for 7 days.

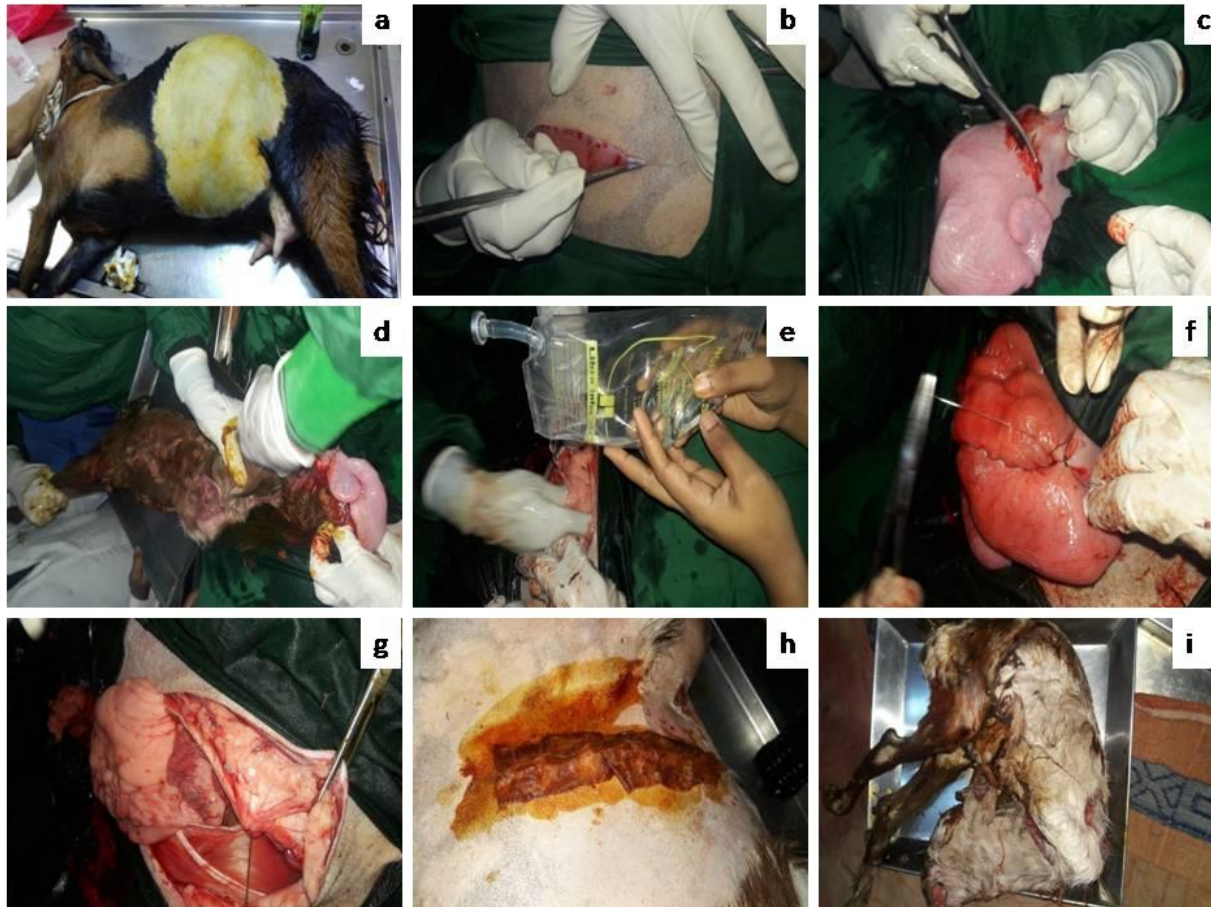


Figure 5: 5 (a) Prepare the animal for anesthesia and surgery; 5 (b) Line of incision on left flank in doe; 5 (c) Incision at uterine wall; 5 (d) Extraction of kid through uterine incision; 5(e) Washing the uterine cavity with normal saline after surgery; 5(f) Czerny-lambert pattern for closing the uterine incision;5 (g) The muscle layer was closed by lock stitch pattern; 5(h) The incision line covered with povisep soaked cotton;5(i) The dead kid due to excessive manipulation before surgery

Chapter III

Results

Table 3. 1: Effect of Anaesthesia During Surgery:

Name of the anesthesia technique	Patient	Pain response during anesthesia	
		Among total	Among group
Distal paravertebral nerve block	44.4%	11.11%	25%
Field block	55.55%	55.55%	100%

From This table it was noted 44.4% patients are anaesthetized by using distal paravertebral nerve block and 55.55% patients were anesthetized by using field block. The patients showed pain response during the time of surgery and it is different in case of two techniques. Among total animals, 11.11% patients showed pain response in case of distal paravertebral nerve block and 55.55% patients showed pain response in case of field block. Among those patients in which distal paravertebral nerve block was used , 25% patients are showed pain response during surgery .On the other hand, 100% patients of field block anesthesia showed pain response among the group in the time of surgery.

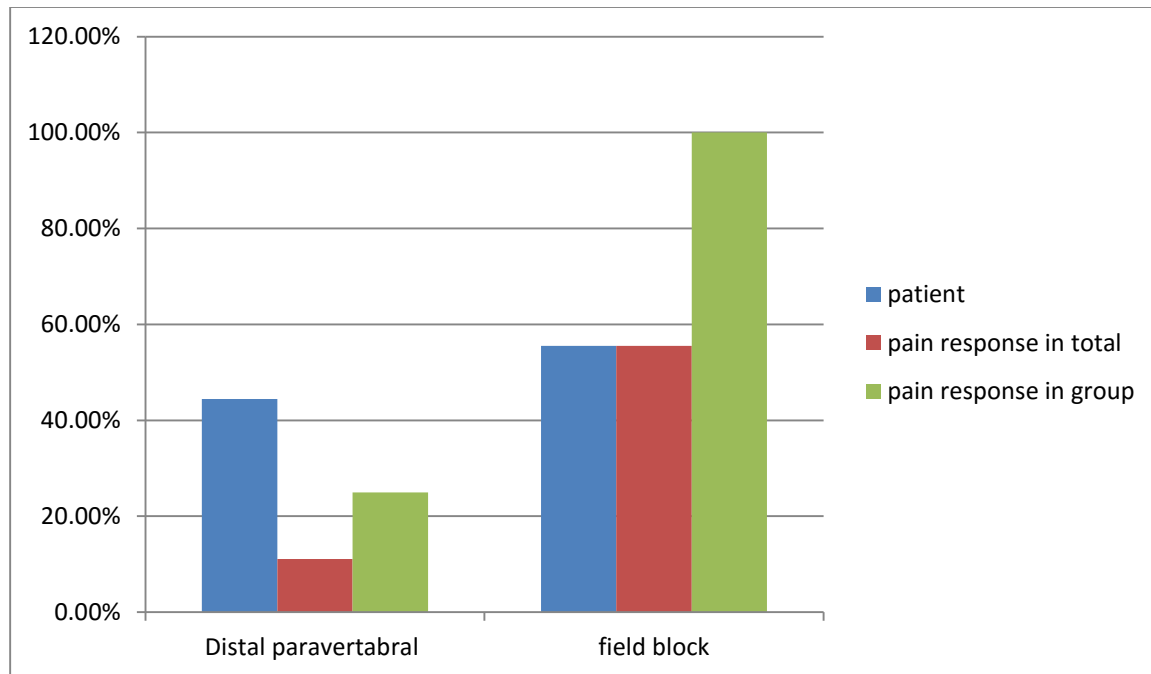


Figure 6: Graphical presentation of pain response in two types of anesthesia during surgery.

Table 3. 2: Effect of Anesthesia After Sugery :

Name of the anesthesia technique	Number of dead dams	Number of live dams	Number of kids	
			live	Dead
Distal paravertabral nerve block	1	3	4	1
Field block	1	4	8	3

This table represents the number of live and dead dams and also the number of live and dead kids comparing two techniques of anesthesia. Among four dams which were subjected to distal

paravetebral nerve block,one dam was died. Another dam was also died from the field block patients which total number was five. Total sixteen kids were delivered after cesarian section,five from distal paravertebral nerve blockage dams in which four were alive and another eleven from field blockage from which eight were alive.

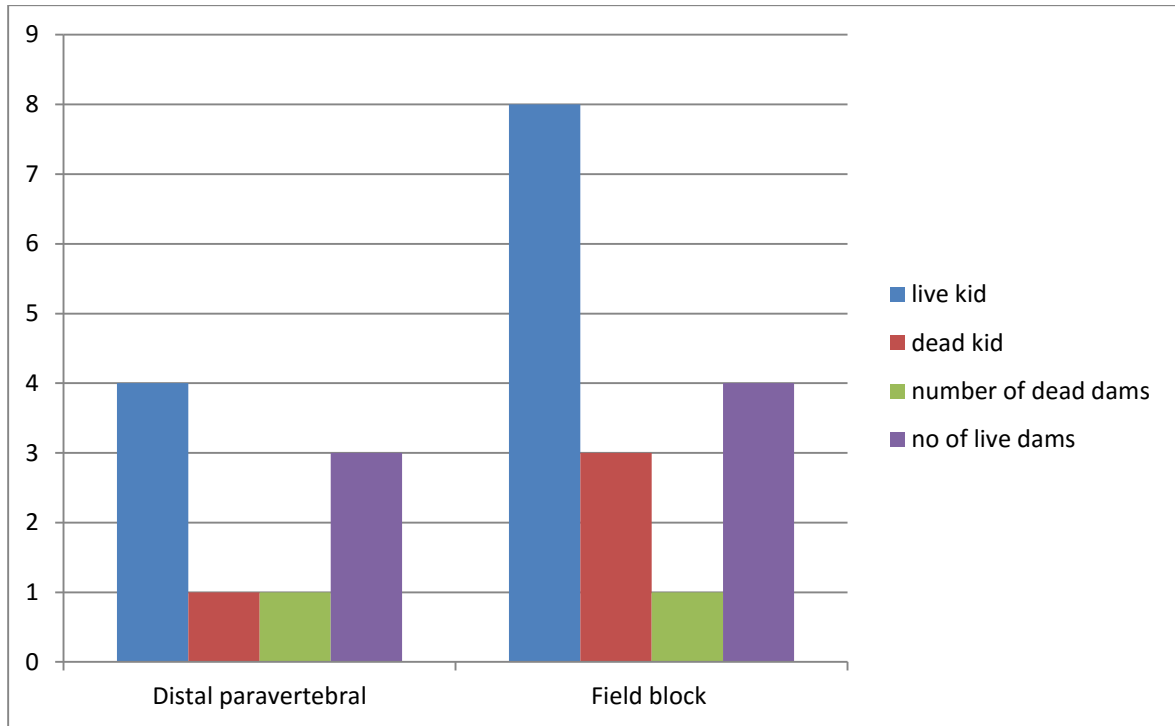


Figure 7 : Graphical presentation of the number of live and dead dams and also the kids

Table 3. 3: Complications After Surgery:

Complication	Post operative days				Total
	3	7	10	15	
Myiasis	1/7	1/7	-	-	2/7
Abscess	-	1/7	-	-	1/7

The complications of surgery are represented by this table. Among seven live dams, two were affected by myiasis in the following post operative days. From third day to seven day of post operative days myiasis were present in the affected dam. In another dam ,at the time of seven days of surgery abscess was found at suture area. So, total two dams are suffering from complication upto seven days of surgery.

Chapter IV

Discussion

In the animal several types of anaesthesia techniques are used such as general anaesthesia, local anaesthesia. But local anaesthesia mainly preferred in case of ruminants. Local anaesthesia were performed mainly in three ways such as line block, field block regional nerve block. (Edmondson, 2008). In this study two types of anaesthesia techniques are used distal paravertebral nerve block and field block (inverted L block).

In this study, distal paravertebral nerve block responded better than the inverted L block. The pain response in field block was more than the distal paravertebral nerve block. C-section was mostly used operative techniques for the correction of dystocia in ruminants. It was decided to perform c-section to the dam for improving the dams condition .Although the operation wa an age old procedure being widely performed over many locations (Vidaya, 2010).

The Main goal of C-section is the preservation of the dams and kids and the future reproductive capacity of the dam. The some important issues should be considered such as dam and kid's health condition .On this reason, C-section was worthwhile to categorize as elective, emergency (Rougoorc, 1994). In This study, C-section was selected as elective surgery to management the dystocia cases and deliver the kids.

But it was reported that fetal and dam survival rates in goats undergoing caesarian section were 23% and 94%. After C-section usually some complication were noticed such as peritonitis, retained placenta, acute metritis, vaginal tears, excessive pre-operative manipulation, vaginal tears, myiasis , abscess (Purohit,2006). These complications mainly ocured due to less care after surgery and were not maintained the proper aseptic surgery. In this study dams were affected by myiasis and abscess were also seen in some dams as the complication of cesarian section.

Myiasis is one of the parasitic problem throughout the world and this parasitic infestation mainly occur in the vertebrate animals due to dipteran fly larvae, feed on the hosts body dead or live tissue, liquid substences, or ingested food for a period of time (Serra-Freire and Mello, 2006). The dipteran fly laid the egg on different anatomical site of the body likes wound or nasal,

oral, genital and aural cavities of the animal (Sherman, 2000). Especially Calliphoridae, Sarcophagidae, Hypodermatidae, Oestridae and Gasterophilidae those flies are commonly cause myiasis (Serra-Freire and Mello, 2006). In tropical country where warm and humid climate prevail almost throughout the year and causative factors are exposure to myiasis causing flies and their increased aggressiveness (Bologna et al, 2008). Wound, laceration, breach after delivery, urine and fecal contamination, cleanliness and sanitary condition, wetted fleece or hair, lack of aseptic surgery, bacterial skin contamination with foul odor etc. are still predictable as the most important predisposing factors for myiasis. (Myiasis Wiki vet, 2011)

In this study, one of the complications of c-section was myiasis after surgery which mainly occurred due to exposure of all types of factors which were conventional for myiasis. As Chittagong is a warm and humid area and wound also create after c-section in which aseptic condition is not maintained, so flies can easily affect the and dam.

In this study abscess also revealed as another complication of c-section.

Abscess is a hollow cavity in the tissue destroying and expanding them and this cavity mainly containing the pus (Misk et al., 2008). In this study stitch abscess occur on the suture area of c-section which is superficial abscess. It was a ripened abscess and evacuated the content from the pocket. After removing content and necrosed tissue the wall of the pocket was touched with povidone iodine and packed with the soaked gauze of tincture iodine. Antibiotic, antihistaminic, painkillers were also used to treat this complication.

Chapter V

Limitations

If the study will be conducted on large population and for a long period of time, it will give better result.

Chapter VI

Conclusion

From this study it was clearly noticed that between two anesthesia techniques in cesarean section of goats distal paravertebral nerve block showed better effect on the surgery and health status than the field block. So, the use of this technique (distal paravertebral nerve block) is safer. Further study is required for knowing about the more efficacy of this techniques.

References

- Amin, M. R., S. S. Husain, and A. B. M. M. Islam.(2001), "Reproductive peculiarities and litter weight in goats." (pp. 297-301).
- Al-Sultan, M.A.H. and Majeed, A.F., 1996. Ring womb in relation to serum calcium and inorganic phosphorous in Iraqi Awassi ewes. *Iraqi Journal of Veterinary Science*, 9, (pp.69-72).
- Arthur, G. H., Noakes, D. E., Pearson, H., & Parkinson, T. J. (1996). *Veterinary reproduction and obstetrics* (Vol. 30, pp. 17).
- Ali, A.M.H., 2011. Causes and management of dystocia in small ruminants in Saudi Arabia. *Journal of agricultural and Veterinary Sciences*, 4(2), pp.95-108.
- Balasubramanian, S., Ramesh Kumar, B., Ayyappan, S. and Pattabiraman, S.R., 1991. Ventral hysterocoele in a doe-a case report. *Indian J Anim Reprod*, 12,(pp.206-7).
- Braun, W. (2007). Parturition and dystocia in the goat. In *Current Therapy in Large Animal Theriogenology (Second Edition)* (pp. 555-558).
- Brounts, Sabrina H., et al.(2004), "Outcome and subsequent fertility of sheep and goats undergoing cesarean section because of dystocia: 110 cases (1981–2001)." *Journal of the American Veterinary Medical Association* 224.2 (pp. 275-281).
- Bologna JL, Jorizzo JL and Rapini R (2008). Cutaneous myiasis. In: *Dermatology*. Vol 1, 2nd edn, Mosby Elsevier. (pp.1300–1301)
- Campbell, M. E., & Fubini, S. L. (1990). Indications and surgical approaches for cesarean section in cattle. *The Compendium on continuing education for the practicing veterinarian (USA)*.(pp.410-419)

- Choudhury, M. P., Sarker, S. C., Islam, F., Ali, A., Bhuiyan, A. K. F. H., Ibrahim, M. N. M., & Okeyo, A. M. (2012). Morphometry and performance of Black Bengal goats at the rural community level in Bangladesh. *Bangladesh Journal of Animal Science*, 41(2),(pp. 83-89).
- Edmondson, M.A., 2008. Local and regional anesthesia in cattle. *Veterinary Clinics of North America: Food Animal Practice*, 24(2), pp.211-226.
- Edwards B.,2001. Regional anaesthesia techniques in cattle. In *Pract* ,23(pp.142–9).
- Frazer, G.S. and Perkins, N.R., 1995. Cesarean section. *Veterinary Clinics: Food Animal Practice*, 11(1),(pp.19-35).
- Hossain, M. S., Akhtar, A., Hossain, M. H., Choudhury, M. P., & Islam, F. (2015). Goat husbandry practices in Southern region of Bangladesh. *J. Biosci. Agric. Res*, 5(02),(pp. 59-64).
- Islam, M. S., Kabir, M. A., & Dutta, R. K. (2012). Productivity, cost-benefit analyses, market prices and constraints to poultry farming in the northern Districts of Bangladesh. *Journal of Life and Earth Science*, 7,(pp. 21-27).
- Koufman, J. A., Amin, M. R., & Panetti, M. (2000). Prevalence of reflux in 113 consecutive patients with laryngeal and voice disorders. *Otolaryngology—Head and Neck Surgery*, 123(4), (pp.385-388).
- Miesner, M.D. and Anderson, D.E., 2008. Management of uterine and vaginal prolapse in the bovine. *Veterinary Clinics of North America: Food Animal Practice*, 24(2),(pp.409-419).
- Misk, N. A., Semieka, M. A., & Misk, T. N. (2008). Predilection seats of body surface abscesses in relation to the way of infection in some domestic animals. In *25th World Buiatrics Congress, Budapest, Hungary*.page no

- Newman, K.D. and Anderson, D.E., 2005. Cesarean section in cows. *Veterinary Clinics: Food Animal Practice*, 21(1),(pp.73-100).
- Purohit, G.N., 2006. Dystocia in the sheep and goat-A Review. *Indian Journal of Small Ruminants*, 12(1),(pp.1-12).
- Serra-Freire, N.M. and Mello, R.P., 2006. Entomologia & acarologia na medicina veterinária. *LF Livros, Rio de Janeiro*, pp.200.
- Sherman, R.A., 2000. Wound myiasis in urban and suburban United States. *Archives of Internal Medicine*, 160(13), pp.2004-2014.
- Rougoor C, Dijkhuizen A, Barkema H, Schukken Y,1994. The economics of caesarian section in dairy cattle. *Prev Vet Med* ;19: (pp.27–37).
- Vidya Sagar P, Veni K, Sai Krishna AK, Vadde KS. 2010 Dystocia dueto fetal ascites with wry neck in a graded Murrah buffalo: A case report. *Buffalo Bull* 29:(pp. 73-74).

***Brief Biography of the
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Nasreen Sultana is an intern veterinarian for the degree of Doctor of Veterinary Medicine (DVM), Faculty of Veterinary Medicine , CVASU. She passed the Secondary School Certificate (SSC) examination in 2009 from Victory Adarsha High School by achieving CGPA 5.00 and Higher Secondary Certificates (HSC) examination by achieving CGPA 4.80 in 2011 from Bangladesh Mohila Samiti Girls' High School and College. She admitted to the degree of Doctor of Veterinary Medicine (DVM), Faculty of Veterinary Medicine , CVASU in 2012-13 session. Now, she is working the dystocia management by C-section using two types of anesthesia techniques to see the comparison of their efficacy. She is interested on surgery and anesthetic protocol.