



Surgical Affections in Calves at Dhunot and Bogura Sadar Upazilas

Md. Shoukot Zaman¹, Moinul Hasan¹, Golshan Ara Tania², Md Mizanur Rahman¹, Mirza Abul Hashim¹✉

¹Department of Surgery and Obstetrics, Bangladesh Agricultural University, Mymensingh 2202, Bangladesh

²Department of Parasitology, Bangladesh Agricultural University, Mymensingh 2202, Bangladesh

ARTICLE INFO

Article history

Received: 18 Apr 2020

Accepted: 16 Sep 2020

Published online: 25 Sep 2020

Keywords

Occurrence, Acquired surgical affections, Congenital defects, Surgical management

Correspondence

Mirza Abul Hashim

✉: mirza_sarah1959@yahoo.com



ABSTRACT

The study aimed to provide baseline information about various surgical affections of calves at Dhunot and Bogura Sadar Upazila Veterinary Hospitals in Bogura District from January 2014 to December 2018. Various surgical affections were diagnosed in 233 calves, this constituted 10.76% of the total surgical cases (2165) admitted during that period at two Upazila. The surgical affections recorded in calves along with occurrence rate were umbilical hernia (9.01%), atresia ani (4.72%), myiasis (8.15%), abscesses (24.03%), omphalitis (25.32%), dermoid cyst (1.72%), fracture (15.88%), and knuckling of limbs (11.16%). Most surgical affections occurred at birth or within 6 weeks of birth. The acquired surgical affections (73.39%) recorded in calves were omphalitis, abscess, fracture and myiasis, and the congenital surgical affections (26.61%) were umbilical hernia, atresia ani, dermoid cyst and knuckling of limbs of the overall surgical cases. In conclusion, omphalitis, abscess, and fracture were found to be the three major surgical affections in calves, but proper surgical management may cure most of the ailments.

Copyright ©2020 by authors and BAURES. This work is licensed under the Creative Commons Attribution International License (CC By 4.0).

Introduction

Surgical affections are those affections that require mechanical, manual, or operative means for correction or elimination of the defects or symptoms. Surgery may be necessary to save lives, prolong the longevity and hasten recovery from an injury (Sarker *et al.*, 2014). Congenital defects are those with which a foetus is born. In Bangladesh, the reported congenital disorders are umbilical hernia, dermoid cyst, non-functional limb joints, supernumerary limbs and atresia ani (Hossain *et al.*, 1980). A considerable number of surgical affections in newborn calves have also been reported from Veterinary Teaching Hospital, Bangladesh Agricultural University (Samad, 2001; Harun *et al.*, 2017). Congenital maladies have increased alarmingly in calves with the intensification of crossbred cattle (Jaman *et al.*, 2018). The acquired surgical affections of calves may include umbilical abscess, navel ill, myiasis, fracture, and various wounds (Das and Hashim, 1996; Samad, 2001). Newborn calves along with the older calves may suffer from these diseases. Other acquired surgical affections in calves may be complications of castration (e.g. gut tie, cirrhous cord), malicious wounds, haematoma due to traumatic

injury, intestinal prolapse, mandibular fracture and injury at the cornea or the eye due to application of obstetrical hook for traction at the time of delivery (Islam *et al.*, 2016). The congenital defects are the most of the surgical affections in newborn calves (Samad, 2001). A mutant gene, chromosomal aberrations or a recessive gene are claimed to be responsible (Superstein *et al.*, 1975). In addition to this, viruses, phytoteratogens, drugs, physical factors, and nutritional deficiency also have been reported to cause congenital defects of the foetuses of sheep and cattle (Inaba *et al.*, 1975). The surgical affections of calves may affect the total performances of the dairy herds and above all the future generation and their health and welfare. The incidence of various congenital and acquired surgical affections in calves in Bangladesh has scarcely been carried out. So, a comprehensive study of selected subnational geographical areas is necessary to establish baseline information for future study of the surgical affections in calves. The present investigation was, therefore, carried out to investigate various surgical affections of newborn calves and calves until 6 months of age and their postoperative consequences and outcome at Dhunot and Bogura Sadar Upazila Veterinary Hospitals.

Cite This Article

Zaman, M.S., Islam, M., Tania, G.A., Rahman, M.M., Hashim, M.A. 2020. Surgical Affections in Calves at Dhunot and Bogura Sadar Upazilas. *Journal of Bangladesh Agricultural University*, 18(3): 623–628. <https://doi.org/10.5455/JBAU.99392>

Materials and Methods

The investigation was carried out at Dhunot and Bogura Sadar Upazila Veterinary hospitals to find out the surgical affection in calves. Those cases of calves whose operations were performed at Upazila Livestocks office hospitals of Dhunot and Bogura Sadar were included in this study. Surgical case reports of newborn calves and calves up to 6 months of age were recorded to determine the occurrence of various surgical affections in newborn calves. The duration of the investigation was from January 2014 to December 2018. The case reports were categorized based on the type of surgical affections in calves. Histories of the case, age, sex, and breed of the calves were recorded. The duration of diseases and the time of operation (as recorded in the case report) were also observed and recorded. Various surgical affections e.g. umbilical hernia, atresia ani, dermoid cyst, myiasis, navel ill, fracture, and knuckling of limbs were recorded. Surgeries of various surgical affections were performed at Upazila Livestocks office hospitals of Dhunot and Bogura Sadar. Techniques of operations and intensive

care of the calves were carefully done at the hospitals. Suggestions were given to the owner for the post-operative measures and the follow-up information was collected. The description of clinical signs and diagnosis of the surgical affections are discussed in Table 1.

Analysis of data

The total number of cases was recorded and compared with the total number of surgical affections of calves to determine the occurrence of surgical affections in calves in that period. The percentage of each surgical affection was determined from the total surgical affections in calves. Thus, a proportionate occurrence of the affections was determined. A Chi-square test was performed to determine the statistical significance of the occurrence of various surgical affections between the indigenous and crossbred calves using the software SPSS version 20.0. P values of less than 0.05, 0.01, and 0.001 were considered significant, highly significant, and very highly significant respectively.

Table 1. Description of clinical signs and diagnosis of the studied surgical affections

Surgical affections	Clinical signs and diagnosis
Umbilical Hernia	An umbilical hernia is the unusual leaving of an abdominal organ, through umbilicus in which it normally resides (Mishra <i>et al.</i> , 2020a and 2020b). Most umbilical hernias in calves were small, soft, reducible masses found at the site of the umbilical scar. The size of the hernial ring was noted and the contents of the sac were determined by palpation. If the contents are reducible, the hernial ring can easily be palpated, confirming the diagnosis. Exploration with needle helped to differentiate hernia from omphalitis or navel ill confirming the diagnosis.
Atresia ani	A distended abdomen, straining without expulsion of the meconium and no inclination to suck within a few hours after birth are the usual clinical signs. Perineal protrusion was recorded in calves after palpation at the flank region. The diagnosis is easily confirmed by the absence of defecation and an anal opening.
Dermoid cyst	Dermoid cysts are solid masses containing hairs, hair follicles, and keratinaceous tissue. There was lacrimation, conjunctivitis and incapability to appose the eyelid at the inner canthus due to swollen dermoids. Unilateral or bilateral dermoids may be present.
Myiasis	Myiasis denotes infestation of humans and/or animals by dipterous larvae usually called maggots (Juyena <i>et al.</i> , 2013). Maggot is the larva of a dipterous insect with legless soft-body (Mishra <i>et al.</i> , 2020c). Myiasis was confirmed by observing the presence of maggots in the open wound.
Omphalitis	The umbilicus is typically hot, painful, and moist. The calf is dull and reluctant to suck and may stand with an arched back. Presence of pus through needle exploration of the umbilical swelling confirms the diagnosis of omphalitis.
Fracture	Fracture is one of the most common orthopaedic disorders seen in causing lameness (Ali <i>et al.</i> , 2017). Physical examination of open fractures revealed local pain, swelling, contusion, laceration, deviations of position, manifestation of crepitus sound, abnormal movement, dysfunction of limb, and unable to bear weight (Mohiuddin <i>et al.</i> , 2018). Radiography could not be done due to absence of X-ray machine.
Knuckling of limbs	Knuckling denotes flexion of the fetlock joint due to injury to spinal cord, nerves, muscle or tendons. Congenital knuckling is also found. There may be partial flexion where the soles of the hooves are bearing weight, or extreme flexion where the front of the pastern is bearing weight.

Results

The total number of referred animals admitted to the hospitals during the study period for surgical operations was 2165. Table 2 shows the surgical cases admitted to the Veterinary Hospitals at Dhunot and Bogura Sadar Upazila. Among the surgical cases in various animals, only the calves contributed a good number of cases reflect the importance of surgical affections in the calves. The percentage of occurrence of various surgical affections in calves was 10.76. The acquired surgical affections recorded in calves were navel ill, umbilical

abscess, fracture and myiasis and the congenital surgical affections were umbilical hernia, atresia ani, dermoid cyst and knuckling of the limbs comprising 73.39% and 26.61% respectively of the overall surgical cases. The surgical affections were demonstrated in figure 1 based on sex of the affected calves.

Acquired surgical affections

The incidence of omphalitis was the highest than any other affections of the calves at the two areas during the study period. The onset of the affections was from 1

week to 2 months (Table 3). The indigenous calves were mostly affected by navel ill. The abscess was the second most common surgical affection found in calves. Abscesses were found to be more common in indigenous calves compared to cross-bred calves (Table 4). The onset of the disease was within 14-45 days after birth mostly during the winter season. The total number of fracture cases was 37 and the occurrence rate was 15.88%. The prognosis of the fracture cases was good in 86.49% of the treated cases. The maggot infestations (myiasis) were recorded in 19 calves. Some cases were due to complications of umbilical infection. The maggot infestation at the umbilicus was found at the age of 14 days whereas other cases were recorded at 2 to 4 months of age (Table 3).

Congenital surgical affections

The knuckling of limbs representing lameness was found the mostly occurred congenital surgical affection in newborn calves. The affections appeared as a

teratological defect of calves. Three calves showed bowed leg either at carpal or tarsal joint of both fore and hind legs. The umbilical hernia was the second-highest occurring congenital deformity in calves. Most hernias occur within 1 month after birth. The onset of the rest of the hernias was 4th week onward up to 8th weeks (Table 3). Atresia ani was found just after birth and the calves have been brought for treatment within 0-7 days of birth. There were only closed anuses in 8 calves. In 3 other calves, agenesis of the rectum with closed anus was observed on which laparotomy has been carried out later (12-21 days after the diagnosis of the disorder). The affection was more common in the indigenous breed (Table 4). The percentage of occurrence of the dermoid cyst was 1.72% (4 out of 233) among the affected calves. In most cases, the dermoid cyst appeared within one month after birth, but late occurrence (up to 6 months of age) was also recorded. In 1 calf, the dermoid cyst was found to occur in both eyes (bilateral) whereas in 3, it occurred in only one eye (unilateral).

Table 2. Various surgical affections in calves with their occurrence at Dhunot and Bogura Sadar Upazila Veterinary Hospital

Type of affection	Name of the affection	Overall occurrence (%)
Acquired	Omphalitis	25.32
	Abscess	24.03
	Fracture	15.88
	Myiasis	8.15
Congenital	Knuckling of limbs	11.16
	Umbilical Hernia	9.01
	Atresia ani et recti	4.72
	Dermoid cyst	1.72

Table 3. Distribution of surgical affections according to their age

Type of affection	Name of the affection	Age range
Acquired	Omphalitis	1 st to 6 th week
	Abscess	2 nd week to 6 th month
	Fracture	Above 6 th weeks
	Myiasis	2 nd week to 6 th month
Congenital	Knuckling of limbs	Within 1 st month
	Umbilical Hernia	1 st to 8 th weeks
	Atresia ani et recti	At birth
	Dermoid cyst	Within 1 month

Table 4. Distribution of surgical affections according to the breed of calves with their statistical significance

Type of affections	Name of the affections	Breed specific occurrence (%)		P value
		Indigenous	Cross	
Acquired	Omphalitis	60.94	39.06	0.001**
	Abscess	57.51	42.49	0.022*
	Fracture	64.81	35.19	<0.001***
	Myiasis	68.67	31.33	<0.001***
Congenital	Knuckling of limbs	61.37	38.63	0.001**
	Umbilical Hernia	57.08	42.92	0.031*
	Atresia ani et recti	63.52	36.48	<0.001***
	Dermoid cyst	50.21	49.79	0.948 ^{NS}

NS = non-significant, * = significant (P<0.05), ** = highly significant (P<0.01), *** = very highly significant (P<0.001)

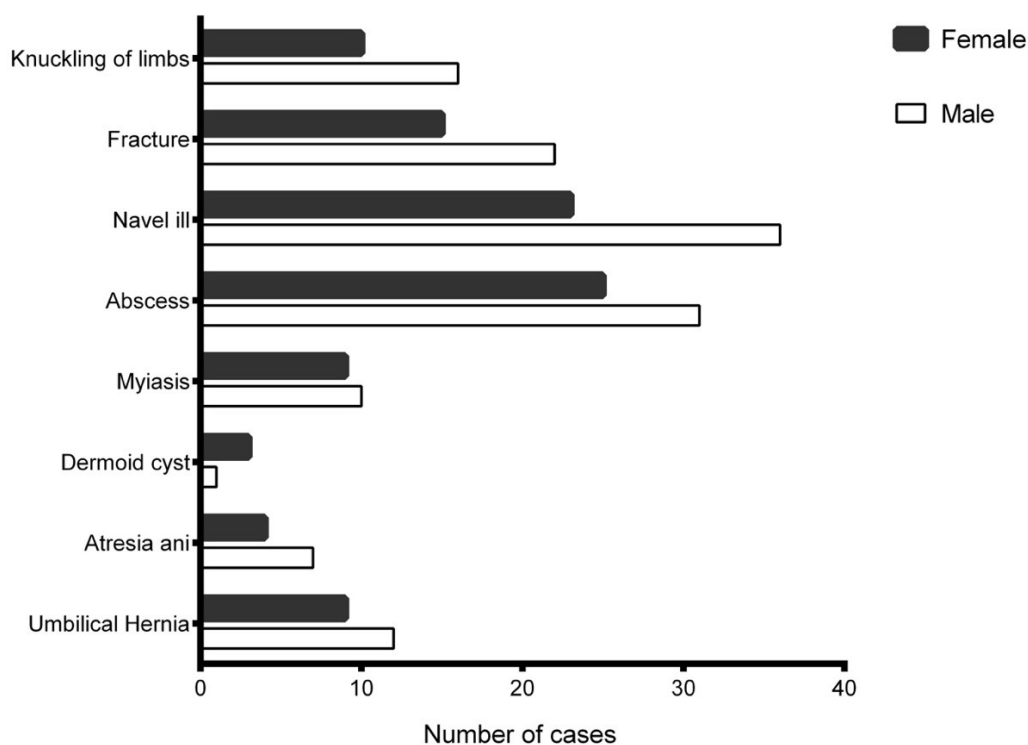


Figure 1. Distribution of surgical cases based on gender of the affected calves

Distribution of surgical affections according to the breed of calves

The surgical affections were categorized based on the breed of the affected calves to determine if there is any significant difference. All the surgical affections (both acquired and congenital) were statistically significant except for the dermoid cyst (Table 4).

Discussion

In this study, the percentage (10.76%) of surgical affections in calves suggests that these affections are quite common which is in agreement with a previous study (Das and Hashim 1996). Various surgical affections were found in calves of which abscess and omphalitis/navel ill are the most common. Umbilical hernia, knuckling of the limbs and fracture and myiasis were common to a lesser extent compared to omphalitis and abscess. The rarely occurred diseases were dermoid cyst and atresia ani et. recti (Islam *et al.*, 2016). The cause of the highest proportionate incidence of omphalitis and abscess was thought to be the poor hygienic management conditions of the farm as well as the surroundings. Omphalitis also affected newborn calves. This may be due to the contamination at the time of severing the umbilical cord. The onset of affections was from 6 days to 2 months. Contamination with urine near the umbilical region may predispose the disease. The higher percentage of the abscesses (24.03%) in this study occurred due to a lack of proper hygienic measures.

Abscesses were found to be more common in indigenous calves compared to crossbred calves. This might be because the crossbred calves were more carefully managed compared to the indigenous calves. The occurrence of the abscess was 24.03% in the present study in contrast to 5.85% in goats (Islam *et al.*, 2019). In this study, fracture ranked third in overall surgical affections with the occurrence rate of 15.88%. However, Alam *et al.* (2014) observed that the occurrence rate was 8% in calves.

Congenital abnormalities can be correlated with the embryological developmental defect of the hindgut and the urogenital tract. The reason for the highest occurrence of knuckling of limbs was unknown. The umbilical hernia in calves may be accounted for the genetic defect as reported in lamb by Dennis and Leipold (1968). In this study, it was found that most hernia occurred within one week after birth. Similarly, previous reports by Berge and Westhues (1986) suggested that the onset of umbilical hernia at birth or just a few days after birth (Gadre *et al.*, 1989). The umbilical hernia was more common in male calves compared to females, which differs from the report by Slatter (1985), who reported a more common occurrence of umbilical hernia in females. The hernial contents may be composed of intestines, omentum, and abomasum (Mishra *et al.*, 2020a). Also, Baird (1993) found a non-reducible liver in the hernia sac. From this study, it was recommended

that irreducible hernia in calves were rare. This may be since people were conscious to treat their calves as soon as they notice the disease. Clinical history revealed that the hernia ring seems to increase its size gradually and thus volume of the contents increased as well. The health conditions of most of the calves were normal and perhaps that was due to the recent occurrence of the disease. Atresia ani was found to be another most common congenital anomaly of the gastrointestinal tract in calves which are in agreement with the findings of Jubb *et al.* (1970) and Islam *et al.*, (2016). This study reported that atresia ani may occur either alone or in association with other malformation, however, very few calves showed other malformation along with atresia ani. According to Roberts (1986), atresia ani with other malformations was common. The ratio of the male-female distribution was found 2:1 (Figure 1) in this study whereas it was 3:1 according to the study reported by Singh *et al.*, (1989a). However, Singh *et al.*, (1989a) found that 32% of the calves had been suffering from atresia ani et recti but this study suggested only two calves (7:1 %) with atresia ani et recti. Dennis and Leipold (1972) reported some associated abnormalities like taillessness, inguinal hernia, and defect in the abdominal wall although in this study such defects were absent. Most of the dermoids were cystic in calves. The contents were hairs, hair follicles, keratinaceous tissue, which are in agreement with Angelo *et al.* (1975). Unilateral ocular dermoids have been reported in cattle (Mishra and Angelo, 1979) and the occurrence of bilateral dermoid appears to be rare (Sarma and Sarma, 1989). This study furnishes baseline information and opens an avenue for future study of the surgical affections in newborn calves to explore certain other aspects.

Conclusion

In conclusion, omphalitis and abscess were found to be the overall major surgical disorders in calves. The congenital major surgical ailment was the knuckling of limbs. The surgical conditions in calves may be considered as an important component of surgical affection in animals in Bangladesh. It is suggested that these affections should be addressed immediately for effective surgical management

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

Alam MM, Juyena NS, Alam M M , Ferdousy RN, Paul S. 2014. Use of Wire Suture for the Management of Fractures in Calves. IOSR Journal of Agriculture and Veterinary Science. 7: 90-96. <http://dx.doi.org/10.9790/2380-07139096>

Ali, M.L., Hasan, M., Miah, M.A.H., Hanif, S.M., Juyena, N.S., Hashim, M.A., 2017. Prevalence of lameness in cattle in selected areas of Bangladesh. The Bangladesh Veterinarian. 34: 1-8. DOI:

<http://dx.doi.org/10.3329/bvet.v34i1.38707>

Angelo, S.J., Vanla, J.P. and Malik, G.S., 1975. Dermoid cystectomy on nictating membrane in Hariana Bull calf. Indian Veterinary Journal. 52: 871-873.

Baird, A.N., 1993. Omphalocele in two calves. Journal of American Veterinary Medical Association. 202: 1481-1482.

Berge, C. and Westhues, T.S., 1986. Veterinary Operative Surgery, Denmark, Medical Book Company, Bonleverd pp. 148.

Das, B.C. and Hashim, M.A., 1996. Studies on surgical affections in calves. Bangladesh Veterinary Journal. 30: 53-57.

Dennis, S.M. and Leipold, H.W., 1968. Congenital hernias in sheep. Journal of American Veterinary Medical Association. 152: 999-1003.

Dennis, S.M. and Leipold, H.W., 1972. Atresia Ani in Sheep. Veterinary Record. 91: 219-222.

Gadre, K.M., Shingatgeri, R.K. and Panchabhai, V.S., 1989. Biometry of Umbilical hernia in cross-bred calf. Indian Veterinary Journal. 66: 989.

Harun, M.K.B., Hasan, M., Juyena, N.S., Alam, M.M., Hashim, M.A., 2017. Effectiveness of polyglactin 910 as a suture material during umbilical herniorrhaphy in calves. Bangladesh Veterinary Journal. 51(1-4).

Hossain, M.A., Sen, M.M. and Rahman, M.A., 1980. A new born calf with a supernumerary limb and atresia ani - A case report. Veterinary Medical Review. 2: 178-179.

Hossain, M.A., Shahidullah, M. and Ali, M.A., 1986. A report on surgical diseases and reproductive disorders recorded at the Veterinary Hospital of Bangladesh Agricultural University, Mymensingh. Bangladesh Veterinary Journal. 20: 1-5.

Inaba, Y., Kurogi, H. and Omori, T., 1975. Akabane disease; epizootic abortion, premature birth, stillbirth and congenital arthrogryposis-hydrancephaly in cattle, sheep and goats caused by Akabane virus. Australian Veterinary Journal. 51: 584-585.

Islam, K.M.E., Talukder, A.K. and Paul, A.K., 2016. Occurrence of common surgical affections in calves and goats at Jhenidah Sadar Upazila of Bangladesh. Asian Australasian Journal of Bioscience and Biotechnology. 1: 394-397.

Islam, S., Hasan, M., Bhattacharjee, S., Hossain, M.S., Alam, M.R., Hashim, M.A., 2019. Surgical affections of Black Bengal goats in selected areas of Sherpur district - A retrospective study. Bangladesh Veterinary Journal. 53: 35-42. <http://dx.doi.org/10.32856/BVJ-53-2019.05>

Jaman, M.M., Mishra, P., Rahman, M., Alam, M.M., 2018. Clinical and laboratory investigation on the recurrence of the umbilical hernia after herniorrhaphy in bovine calves. Journal of Bangladesh Agricultural University. 16: 464-470. DOI: <https://doi.org/10.3329/jbau.v16i3.39418>

Jubb, K.V.F., Kennedy, P.C. and Palmer, N., 1970. Pathology of domestic animals. Vol. II, San Diego, New York, Boston, London, Sydney, Tokyo, Toronto, Academic Press, INC. Harcourt Brace Jovanovich, pp. 85.

Mishra, P., Mahmud, M.M., Shahid, M.A.H., Hasan, A., Yadav, V.K., Hasan, M., 2020c. Molecular detection of methicillin-resistant Staphylococcus aureus (MRSA) from a clinical case of myiasis wound. Veterinary Sciences: Research and Reviews, 6(2): 96-99. <http://dx.doi.org/10.17582/journal.vsr/2020/6.2.96.99>

Mishra, P., Mahmud, M.M., Yadav, V.K., and Hasan, M. 2020a. Umbilical hernia with extensive adhesion and evisceration in a bovine calf. Iranian Journal of Veterinary Surgery. 15: 92-95. <http://dx.doi.org/10.22034/ivsa/ivsa.2020.205918.1202>

Mishra, P., Yadav, V.K., Hasan, M., 2020b. Evisceration of umbilical content with extensive adhesion: A surgical approach. Clinical Case Reports. 00: 1-2. <https://doi.org/10.1002/ccr3.3217>

Mishra, S.S. and Angelo, S.J., 1979. Corneal Dermoidectomy in a calf. Indian Veterinary Journal. 56: 796-797.

Mohiuddin, M., Hasan, M., Shohag, M., Ferdousy, R.N., Alam, M.M., Juyena, N.S., 2018. Surgical management of limb fractures in calves and goats. Bangladesh Veterinary Journal 52: 46-56. <http://dx.doi.org/10.32856/BVJ-2018.06>

- Roberts, S.J., 1986. Veterinary obstetrics and genital diseases. 3rd Edn. pp. 54-57. Scientific Book Agency, New York.
- Samad, M.A., 2001. Observations of clinical diseases in ruminants at the Bangladesh Agricultural University. Veterinary Clinic. Bangladesh Veterinary Journal. 35: 93-120.
- Sarker, N.U., Samaddar, K., Haq, M.M. and Rahman, M.M., 2014. Surgical affections of cattle in the milk-shed areas of Bangladesh. The Bangladesh Veterinarian. 31: 38-45.
- Sarma, B. and Sarma, K.K., 1989. A case of corneal dermoid on a calf. Indian Journal of Veterinary Surgery. 66: 660-661.
- Singh, A.P., Al-Badrany, M.S., Eshoe, S.M. and Abid, T.A., 1989a. Atresia ani and atresia ani et recti in farm animals. Indian Veterinary Journal. 5: 458-461.
- Singh, P., Sarma, D.K., Sukhbir, S., Bell, S.M. and Channa, S., 1989b. Polymelia with atresia ani in a cow calf. Indian Journal of Veterinary Surgery. 10: 62-64.
- Slatter, D.H., 1985. Textbook of small animal surgery. 2nd Edn. pp. 504-1524. W.B. Saunders Company, Philadelphia, London, Toronto.
- Superstein, G., Lelpo'd, H.W. and Dennis, S.M., 1975. Congenital defects of sheep. Journal of American Veterinary Medical Association. 167: 314-322.