

Study on Calving Pattern in Buffaloes

Mahesh S. Dodamani*, Khaja Mohteshamuddin, S.D. Awati, M.K. Tandle and S.S. Honnapagol,

Department of Animal Reproduction, Gynecology & Obstetrics,
Veterinary college, Karnataka veterinary animal & fisheries sciences university,
Nandinagar, P.B.No:6, Bidar-585401, Karnataka, INDIA
Correponding author e-mail: maheshdodamani@gmail.com, Mobile no: +919480361005

Abstract

The present investigation was carried out on 12 parous she buffaloes maintained by farmers in the rural area around Bidar district. The dilation of cervix, expulsion of fetus and the expulsion of fetal membranes required a mean duration of 35.25 ± 1.08 , 43.16 ± 1.21 and 431 ± 46.52 minutes respectively. The mean duration for the whole act of parturition was recorded as 509.41 ± 45.72 minutes. In all cases, allantochorion appeared as the first water bag. The fetuses were found in anterior longitudinal presentation and dorso-sacral position with head resting on forelimbs. Maximum number of calvings (80%) occurred during night hours (6 p.m. to 6 a.m.).

Key Words: Fetal membranes, Parturition, Buffaloes.

Introduction

The calving patterns/behavior of the animal depends on several causes like- heredity of the species which determines behavior pattern, the presence/absence of primary stimulation which produces the calving behavior and thirdly, animals organize their behavior pattern of calving through the process of learning and behave according to what they have learned by previous calving experience. No two calvings either within the species or within the individual animals are exactly alike. There are wide variations regarding outset of labor pain, its intensity, frequency and amplitude. In the light of the present study, precise information regarding the sequence of events leading to the expulsion of calf and the fetal membranes is of considerable importance in arriving at a decision, as to when external assistance is required for the completion of the act. The present investigation was undertaken to study the calving patterns of buffaloes.

Materials and Methods

The course of parturition was divided into three stages, as described by Roberts (1976).

The first stage of parturition was considered to have begun when the external os of cervix permitted the entry of cone of hand and completed when the cervical canal formed a uniform passage between uterus anteriorly and vagina posteriorly. The time taken for the completion of first stage was recorded.

The second stage was considered to extend from complete dilatation of cervix up to the expulsion of

whole body of the fetus. Time intervals between the following were recorded:

- (i) The onset of intense labor pain and appearance of first water bag (allantochorion)
- (ii) Appearance of allantochorion and its rupture.
- (iii) Rupture of first water bag and appearance of second water bag (amniotic sac).
- (iv) Appearance of amniotic sac and appearance of fetal limbs.
- (v) Appearance of fetal limbs and appearance of fetal muzzle.
- (vi) Appearance of fetal muzzle and appearance of fetal head.
- (vii) Appearance of fetal head and its expulsion.
- (viii) Expulsion of fetal head and appearance of fetal shoulders.
- (ix) Appearance of fetal shoulders and its expulsion.
- (x) Expulsion of fetal shoulders and expulsion of rest of the body.

The presentation position and posture of the fetus were noted.

The third stage of parturition was counted from expulsion of fetus to complete dropping of fetal membranes by the animal and the time required was recorded. The she buffaloes that had not shed their fetal membranes within 8-12 hours of calving were treated as a case of retained placenta and excluded from the study.

Results and Discussion

First Stage: The stage of cervical dilation lasted an average of 35.25 ± 1.08 minutes. The duration of the

Table-1. Time (Mean \pm S. E.) taken during different stages of parturition in buffaloes:

Stage of parturition	Time in minutes
First stage	35.25 \pm 1.08
Second stage	43.26 \pm 1.21
1) Interval between onset of intense labor pain and appearance of first water bag (allantochorion)	10.20 \pm 1.04
2) Interval between appearance of allantochorion and its rupture.	2.33 \pm 0.43
3) Interval between rupture of first water bag and appearance of second water bag (amniotic sac).	7.90 \pm 1.14
4) Interval between appearance of amniotic sac and appearance of fetal limbs	5.72 \pm 0.80
5) Interval between appearance of fetal limbs and appearance of fetal muzzle.	4.73 \pm 0.33
6) Interval between appearance of fetal muzzle and appearance of fetal head.	3.13 \pm 0.45
7) Interval between appearance of fetal head and its expulsion.	1.23 \pm 0.47
8) Interval between expulsion of fetal head and appearance of fetal shoulders.	2.83 \pm 0.32
9) Interval between appearance of fetal shoulders and its expulsion.	4.18 \pm 0.47
10) Interval between expulsion of fetal shoulders and expulsion of rest of the body	2.24 \pm 0.25
Third stage	431.00 \pm 46.52
Entire length of parturition	509.41 \pm 45.75

first stage recorded in the investigation was shorter than that recorded by various workers (Roy and Luktuke. 1962: 1 Singh et al. 1966: Samadhia. 1967: Pandey et al. 1984: Andrabi and Gill. 1993: Rawal and Singh, 1993: Singh et al. 1994). The variation may possibly be due to different criteria adopted for determination of the onset and termination of the first stage of parturition by different workers.

Second Stage: An average of 10.20 \pm 1.04 minutes (range 5.35 to 16 minutes) elapsed between the termination of first stage and the appearance of first water bag. In all the 12 animals' allantochorion appeared as the first water bag. The chorioallantoic sac appeared as a somewhat bluish sac. The sac ruptured after an average time interval of 2.33 \pm 0.03 minutes (range 1.25 to 6 minutes).

Following rupture of the first water bag there was temporary cessation of abdominal straining, which recommenced as the second water bag approached the vulva. An average of 7.90 \pm 1.14 minutes (range 1.5 to 15 minutes) elapsed between the rupture of first water bag and the appearance of second water bag. From this point onwards the animals frequently alternated between standing and recumbent positions, although neither was maintained for long.

The amniotic sac protruded through the vulva as an intact, opaque white structure which ruptured soon due to fetal movements and vigorous uterine contractions. Following rupture of this, the buffaloes attempted to lick up the fluid released. The time interval between the appearance of amniotic sac and the appearance of fetal limbs averaged 5.72 \pm 0.80 minutes (range 1 to 12 minutes).

After both fore limbs were observed at the vulvar lips, little outward progression was seen during each series of abdominal contractions. Sometimes the fetal limbs disappeared into the vagina as the dam stood up. The muzzle then followed an average interval of

4.73 \pm 0.33 minutes (range 2 to 9 minutes). Fetal head appeared at an average of 3.13 \pm 0.45 minutes (range 1 to 6 minutes) later. Expulsion of fetal head required maximum expulsive efforts. Interval from appearance of fetal head to its expulsion averaged 1.23 \pm 0.47 minutes (1.00 to 1.75 minutes).

The average time interval between the expulsion of fetal head and the appearance of fetal shoulders was 2.83 \pm 0.032 minutes (range 1 to 5 minutes). The expulsion of fetal shoulders required an average of 4.18 \pm 0.047 minutes (range 2.30 to 6.25 minutes).

The rest of the fetal body was expelled within an average of 2.24 \pm 0.25 minutes (range 1 to 3.5 minutes).

The total mean time taken during second stage of parturition (from the onset of intense labor pain to the expulsion of whole body of fetus) was found to be 43.16 \pm 1.21 minutes (Table-1).

In all cases, the fetuses were presented in anterior longitudinal presentation and in dorsosacral position with head resting on forelimbs. In all the cases the umbilical cord of the fetus ruptured spontaneously as the fetus was expelled. All the dams exhibited maternal instinct by licking the newborn calves within minutes of their expulsion.

In the present investigation, the mean duration of second stage of parturition was longer than that reported by Rawal and Singh (1993) who considered the second stage to extend from the appearance of the water bag to calving.

In the present study, the maximum straining was observed during the expulsion of fetal head followed by fetal shoulders. These findings are in agreement with the reports of Singh (1989).

Third Stage: After the expulsion of fetus, a part of the fetal membrane was observed hanging from the vulva. The dams resumed straining with renewed vigor after a lag phase of few minutes. The straining continued infrequently till the complete dropping of fetal

membranes. The fetal membranes were expelled by the dams at an average interval of 431.00±46.52 minutes after the delivery of the calf. The minimum and maximum time taken by buffaloes under study during third stage of labor was 150 and 650 minutes, respectively (Table 1).

The mean duration of third stage of labor in the present study compares favorably with the reports of Pandey et al (1984) and Mukesh Modi et al (2002) who recorded an average duration of 443.83±24.86 and 429.33±43.84 minutes respectively. However, the duration of third stage in the present investigation was longer than that recorded by Quayam et al. (1986), Sarvaiya et al. (1990) and Rawal and Singh (1993), Roy and Luktuke (1962) reported that the intensity of labor significantly influenced the duration of third stage in buffaloes.

The whole process of parturition was completed in a mean time of 509.41±45.75 minutes with a range from 233.00 to 729.00 minutes (Table 1). In the present investigation, more calvings (80%) were recorded during night hours (6 p.m. to 6 a.m.).

References

1. Andrabi, S.Z.A. and Gill R.S. (1993). Studies on the calving behavior in buffaloes. *Indian journal of Animal Production and Management*.9:2-3, 61-66.
2. Mukesh Modi, Chauhan R.A.S. and Shukla S.P. (2002): process of parturition in buffaloes. *Indian Journal of Animal Reproduction*; 23(2): 141-143; December 2002.
3. Pandey, S.K; Kharche K.G. and Pandey S.K. (1984). Studies on symptoms and process of parturition in Murrah buffaloes. *Cheiron*, 13 (1): 19-25.
4. Quayam. SA; Neduncheralathan B. and Kathiresan D (1986). Effect of season of calving and sex and birth weight of calf on third stage of labor in she buffaloes. *Cheiron*. 15(2):56-57.
5. Rawal C.V.S and Singh R (1993).different stages of parturition in buffaloes. *Indian journal of Veterinary Research*. 2(2): 30-33.
6. Roberts. S.J. (1976). *Veterinary Obstetrics and Genital Diseases. (Theriogenology)*. 2nd Edn.. pp. 201-209. Indian Edn.Scientific Book Agency. Calcutta-1.
7. Roy D.J. and Luktuke. S.N. (1962). Studies on involution of uterus in buffaloes. *Indian journal of Veterinary Science*. 32:205-209.
8. Samadhia. V.N. (1967). Studies on the process of parturition and involution of uterus in buffaloes. M.V.Sc. Thesis. J.N.K.V.V., Jabalpur (M.P.)
9. Sarvaiya, N.P; Mehta. V.M; Deshpande.V and Janakiraman. K. (1990). Effect of sex of calf, season of calving and parity on placental weight and expulsion time in Surti buffaloes. *Cheiron*. 19(3): 122-126.
10. Singh. D; Bhailla. R.C. and Soni. B.K. (1966). Studies on reproduction in Murrah buffaloes: Process of parturition. *Indian Vet. Journal* 43: 812-819.
11. Singh R. (1989): Studies on process of parturition and fetal fluids in Murrah buffaloes. M.V.Sc. Thesis. Haryana Agricultural University. Hisar.
12. Singh R.; Khar, S.K. and Chander. S (1994). Parturition in buffaloes: *Indian Journal of Animal Science*. 64(10): 1028-1033.
