



Survival and fertility rate in buffaloes following caesarean section and mutation with/without partial fetotomy

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ABSTRACT

Dystocia cases (143) were analyzed to observe the consequences of caesarean section and dystocia on viability and fertility of dam. Caesarean sections (63) and mutations (80) with/without partial fetotomy were performed. The survival rate of dams those experienced caesarean section and mutation with/without partial fetotomy was 34.9% and 80%, respectively. The animals experiencing caesarean section resulted in a 45.1% lower survival rate as compared to animals with/without partial fetotomy. The conception rate in dams was 36.36 and 23.43%, respectively, that had caesarean deliveries and mutations with/without partial fetotomy. The overall conception rate in both the groups was 26.74%. The data indicated that caesarean section and mutation end with lower conception rate in affected dams. The dams undergoing a cesarean section had a higher mortality rate, a longer interval from first service to conception than those with mutation.

Key words: Caesarean, Conception, Dystocia, Mutation, Partial fetotomy, Survival rate

Caesarean section and obstetrical mutation with partial fetotomy are routinely performed in domestic animals to relieve dystocia. Various causes of dystocia are uterine torsion, insufficient dilation of cervix, feto-maternal disproportion, fetal-emphysema, dropsy of fetal membranes, monstrosity and mal-presentation, position and posture (Noakes *et al.* 2009). The study was planned to find out the effect of caesarean section, mutation with/without partial fetotomy on maternal survival and fertility rate. The effect of season on the mentioned parameters was also observed.

The observation of Sharma *et al.* (1993) stressed that at any given point of time, animals with reproductive disorders should not exceed 10%. In his study on slaughter house genitalia, recorded the incidence of reproductive disorders in buffaloes as 37.5%. Reproductive disorders are complex and are associated with multi-factorial etiologies. Depending on their nature and severity, all such etiologies culminate in suboptimal reproductive performance. Peri-parturient disorders are recognized as the most important factors affecting fertility. Sub-optimal reproductive performance has direct and severe economic effects in terms of losses due to reduced production and additional cost on management

(Mulligan *et al.* 2006). Impairment in the normal reproductive function results in sub-fertility, infertility, sterility, leading to economic losses owing to the loss of cycles, extended dry period, lower number of calvings and lactations, increased cost of management and culling due to infertility and sterility (Agarwal *et al.* 2005). Keeping in view the above facts, the present investigation was carried to study the effect of obstetrical maneuvers on future fertility in dystocia affected buffaloes.

MATERIALS AND METHODS

Buffaloes (143) suffering with dystocia were included in the presented study. These cases required either caesarean section (63) or mutation including partial fetotomy (80). Most of these cases were in second stage of parturition with the history of failure of delivery of fetus per vaginum. On per-vaginal examination, various fetal anomalies were also observed, which required either mutation with/without partial fetotomy or caesarean sections. All the caesarean sections were performed in lateral recumbency with site of incision lateral and parallel to milk vein with local infiltration of anaesthetic agent (80–120 ml of 2% lignocaine hydrochloride). Skin, muscles and peritoneum were incised. Omentum was reflected except few cases where it was incised. Uterus was incised and fetus was delivered. Six intrauterine boli were placed in the uterus before suturing the uterus with cushing and lembert suture pattern. The

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oxytocin, 50 IU, and calcium boro-gluconate (450 ml) were administered intravenously after suturing muscles employing lock stitch with chromic catgut no. 3 and skin with horizontal mattress suture pattern respectively. The post operative treatment in mutation with/without partial fetotomy was same as in caesarean section except topical dressing. The feedback was taken telephonically from the animal's owners at a regular interval of 15 days. The whole study was divided into 4 quarters e.g. summer (April to June), rainy season (July to September), winter (October to December) and spring (January to March), to record the effect of season on fertility and maternal survival rate. Chi square test was conducted to compare the incidence of recovery rate and conception rate between the caesarean and mutation groups. Level of significance was considered at 5%.

RESULTS AND DISCUSSION

The objective of this study was to analyze the effect of dystocia on dam viability and fertility. In this study, caesarean section and obstetrical mutations with/without partial fetotomy were performed to relieve dystocia.

The maternal recovery (Table 1) in caesarean deliveries was significantly ($P < 0.05$) lower (34.9%) compared to deliveries of fetus by mutation with/without partial fetotomy (80%). The animals experiencing caesarean section resulted in a 45.1% lower survival rate and longer interval from first service to conception as compared to animals treated with/without partial fetotomy. Kumar (2012) observed 62.5% survival rate in fresh dystocia cases those were fresh and not handled at field level as compared to 25% in those animals which were already handled at field level. A population-based historical cohort suggested that cows undergoing a cesarean section had a higher calf mortality rate, a longer interval from first service to conception (Barkema *et al.* 1992).

All the 22 dams survived after caesarean resumed estrus and 8 (36.36%) of them conceived upon mating/artificial insemination. In case of dystocia, 64 animals survived after mutation with/without partial fetotomy, out of which 15 (23.43%) animals conceived upon mating/artificial insemination. An overall conception was 26.74% in dystocia affected buffaloes treated with caesarean and mutation with/without fetotomy. The animals experiencing caesarean section resulted in a 12.93% higher ($P < 0.05$) conception rate compared to animals treated with mutation with/without

Table 2. Effect of season on fertility and maternal recovery rate

	Caesarean		Mutation	
	Maternal recovery rate	Fertility rate	Maternal recovery rate	Fertility rate
Summer	5/15 (33%)	2/15 (13.3)	29/36 (80.50%)	2/36 (5.5)
Autumn	4/22 (20.8%)	-/22	9/9 (100%)	5/9 (55.55)
Winter	9/18 (50%)	3/18 (15.5)	20/23 (87%)	5/23 (21.73)
Spring	5/8 (62.5%)	3/8 (37.5)	7/12 (58.33%)	3/12 (25)

partial fetotomy. Laster *et al.* (1973) reported that dystocia resulted in a 15.6% lower conception rate than in normally calved cows.

The survival rate of dam was highest during spring (62.5%) and autumn (100%) in cases that were treated by caesarean section and mutation with/without partial fetotomy, respectively. The lowest survival rate of dam was observed during autumn (20.8%) in caesarean cases compared to cases treated by mutation with/without partial fetotomy (100%) in the same season (Table 2).

The fertility rate was highest in dams treated with caesarean in spring (37.5) and in autumn (55.55) treated with mutation with/without partial fetotomy; it was lowest with caesarean in autumn and in summer treated with mutation with/without partial fetotomy. Abayawansa *et al.* (2011) reported that season of calving influenced the intervals from calving to estrus and conception. Monsoon calving buffalo had shorter while summer and winter calving buffalo had longer intervals from calving to estrus and conception. In the present study, conception rate was found highest during autumn followed by winter in all dystocia cases treated with mutation with/without partial fetotomy which might be due to decrease in environmental temperature and availability of green fodder. The success of buffalo husbandry lies in ensuring proper and optimal reproductive rhythm of individual animals (Khan *et al.* 2009). Lopez *et al.* (2007) conducted an experiment on analysis of fertility on dystocia affected Holsteins, and showed poor fertility after dystocia with 12% conception at first insemination. In the present study, it was concluded that recovery of dam was less in caesarean operated buffaloes than buffaloes treated by mutation with/without mutation and conception rate was higher in former case. Similarly, recovery of dam was higher in caesarean operated buffaloes in autumn and in winter season treated by mutation with/without mutation. Fertility rate was highest in caesarean operated buffaloes in winter and autumn in buffaloes treated by mutation with/without mutation.

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Table 1. The maternal recovery and fertility rate

	Total cases (n)	No of animals recovered (n)	Recovery rate (%)	Conception	Percentage of conception	Overall conception
Caesarean	63	22	34.9	8/22	36.36	23/86 (26.74%)
Mutation	80	64	80	15/64	23.43	

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