

## **EFFECT OF DIFFERENT SURGICAL APPROACHES ON VARIOUS PHYSIOLOGICAL PARAMETERS BEFORE AND AFTER CAESAREAN SECTION IN COWS SUFFERING FROM DYSTOCIA**

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**Abstract:** The present work was designed to study the effect of recumbent left oblique ventro lateral (group A) and caudal para median (group B) incision sites on cases of dystocia undergoing caesarean section in cows (n=6 each) which were compared with normal calving animals (n=6) as control in which no surgical intervention was done.

Physiological parameters were taken followed by blood sample collection to know different parameters of blood and serum, before caesarean, 0, 24, 48 and 72 hours after caesarean section and normal calving in control group. Among physiological parameters heart rate and pulse rate restored early in group A, rectal temperature and respiration rate restored in both the groups simultaneously when compared to control. No difference was found in the time of onset of estrum after the caesarean operation in cows suffering from dystocia when compared with cows undergoing normal parturition. In our findings recumbent left oblique ventro lateral is a better site to perform the operation.

**Keywords:** Caesarean section, cows, dystocia etc.

### **INTRODUCTION**

Dairying has turned into an imperative secondary source of wage for millions of rural families in India and has been accepted as the most essential part in giving business and wage producing opportunities especially for minor ranchers. Optimum fertility is fundamental to keep up a dairy farm in good financial condition. Different unusual parturition conditions like dystocia, stillbirth, premature birth and abortion directly or indirectly influence farm financial matters. Creatures that had experienced abnormal parturition particularly stillbirth had fundamentally expanded danger of winnowing all through the lactation (Bicalho *et al.*, 2007). The occurrence of abnormal parturition has a tendency to be population specific because of hereditary and non-genetic factors (Berry *et al.*, 2007) and thus data on the rate of abnormal parturition is useful in enhancing the breeding and management in a dairy animals herd.

To perform fruitful cesarean section in buffaloes is straight forwardly related with legitimate decision of incision approach. That is the reason different incisional approaches have been recommended (Verma *et al.*, 1979; Noordsy *et al.* 1979; Saxena *et al.*, 1989).

Dystocia intensifies the stress and consequently affecting hematological and biochemical blood parameters (Rajala and Grohn, 1998). Hematological traits like hemoglobin, packed cell volume, differential leucocyte count, total leucocyte count, erythrocyte sedimentation rate and so forth are influenced under stress condition and in this manner are known as diagnostic aids.

## MATERIALS AND METHOD

The study of caesarean section operations were carried out on 12 clinical cases of dystocia in cows using two different sites. In Group A(n=6), the incision site was recumbent left oblique ventrolateral and in Group B(n=6,) the incision site was recumbent left caudal paramedian compared with Control (n=6), normal calving animals (without surgical interventions).

### Recording of Physiological parameters

The physiological status of animal body was assessed by temperature, pulse rate, heart rate and respiration rate. In both caesarean section group the physiological parameter of animals were taken before operating the animal and after treatment at regular intervals (0, 24, 48, 72 hr). Corresponding parameters were also taken in control group (parameters were taken since 6-12 hours before calving and the parameters closest to calving time were taken as record).

## RESULTS AND DISCUSSION

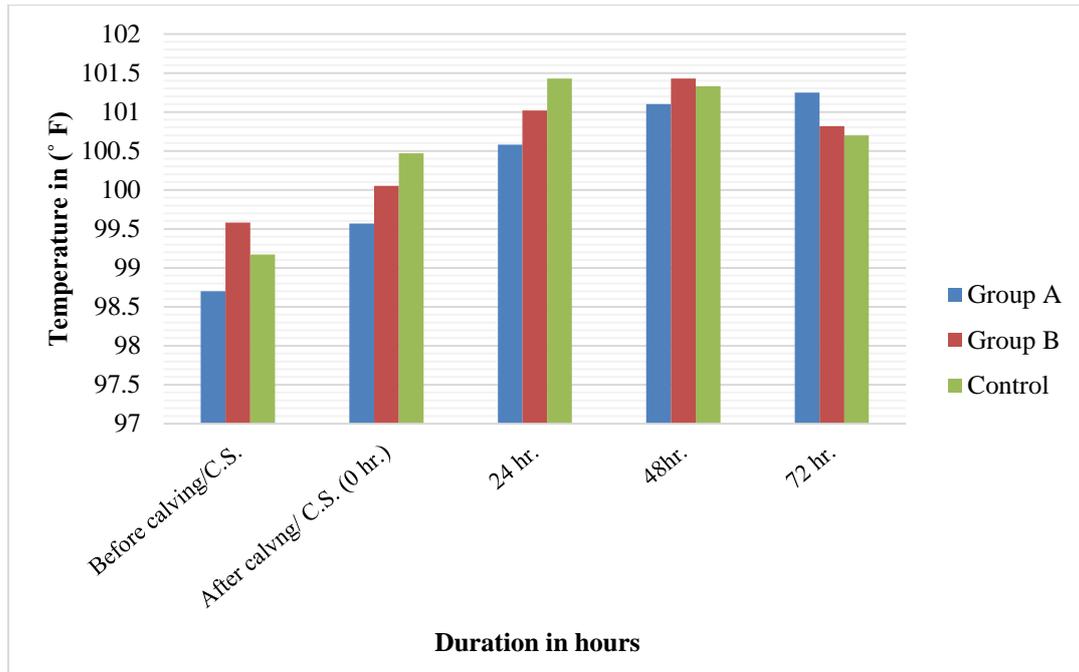
### Rectal temperature (°F)

Results of rectal temperature has been shown in Table 1 and illustrated in Fig 1 and 2.

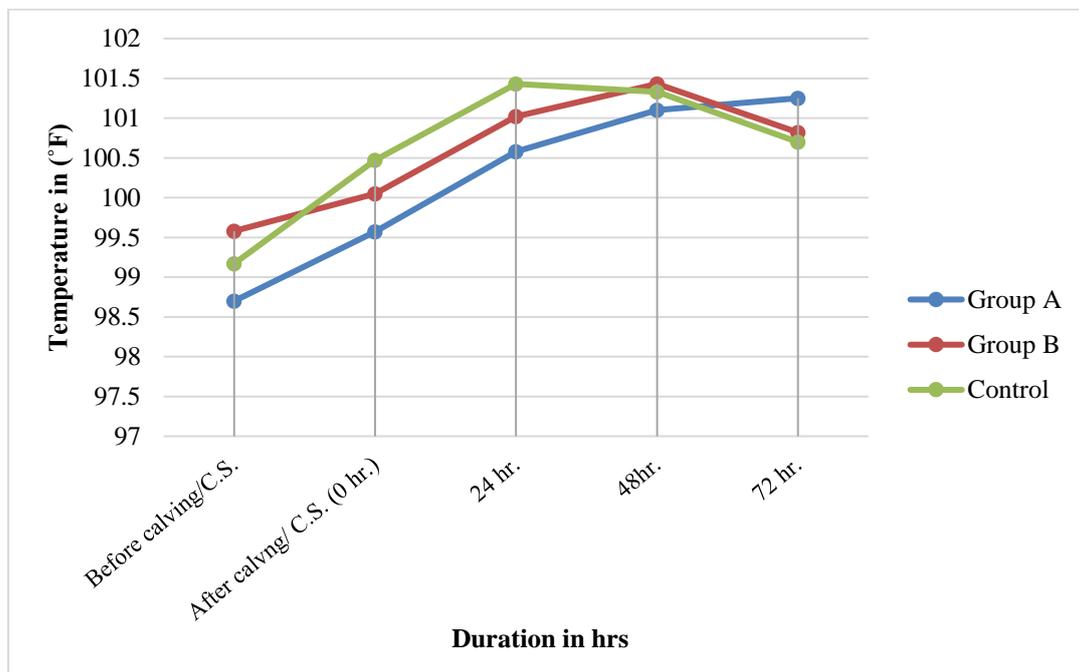
**Table 1: The average values of rectal temperature (Mean ±SE) in cows at different time intervals in degree Fahrenheit (Normal range being 100.4-102.8 °F, Dukes, 2013)**

Time	Group A	Group B	Control (Eutocia)
Before calving/C.S.	98.7±1.21 <sup>bA</sup>	99.58±0.53 <sup>bA</sup>	99.17±0.68 <sup>bA</sup>
After calving/ C.S. (0 hr.)	99.57±1.12 <sup>bA</sup>	100.05±0.08 <sup>abA</sup>	100.47±0.33 <sup>abA</sup>
24 hr.	100.58±0.75 <sup>abA</sup>	101.02±0.31 <sup>abA</sup>	101.43±0.34 <sup>aA</sup>
48hr.	101.1±0.77 <sup>abA</sup>	101.43±0.18 <sup>aA</sup>	101.33±0.11 <sup>abA</sup>
72 hr.	101.25±0.55 <sup>aA</sup>	100.82±0.29 <sup>abA</sup>	100.7±0.22 <sup>abA</sup>

Mean bearing common superscripts a, b (within column) and A (within rows) did not differ significantly (p>0.05).



**Fig. 1: Clustered column diagram depicting rectal temperature (°F) in dystocia and control animals treated by caesarean section using two different sites**



**Fig. 2: Line diagram showing rectal temperature (°F) in dystocia and control animals treated by caesarean section using two different sites**

Our findings are in accordance with Burfeind *et al.* (2011) who observed in a study of 55 dairy cows that there was decrease in rectal and vaginal temperature before 48 hours of calving.

Lammoglia *et al.* (1997) also observed the decrease in body temperature of multiparous beef cows from 48 to 8 hours before calving, they concluded that it was because of changing concentration of P.G.F.M and T<sub>3</sub> hormone.

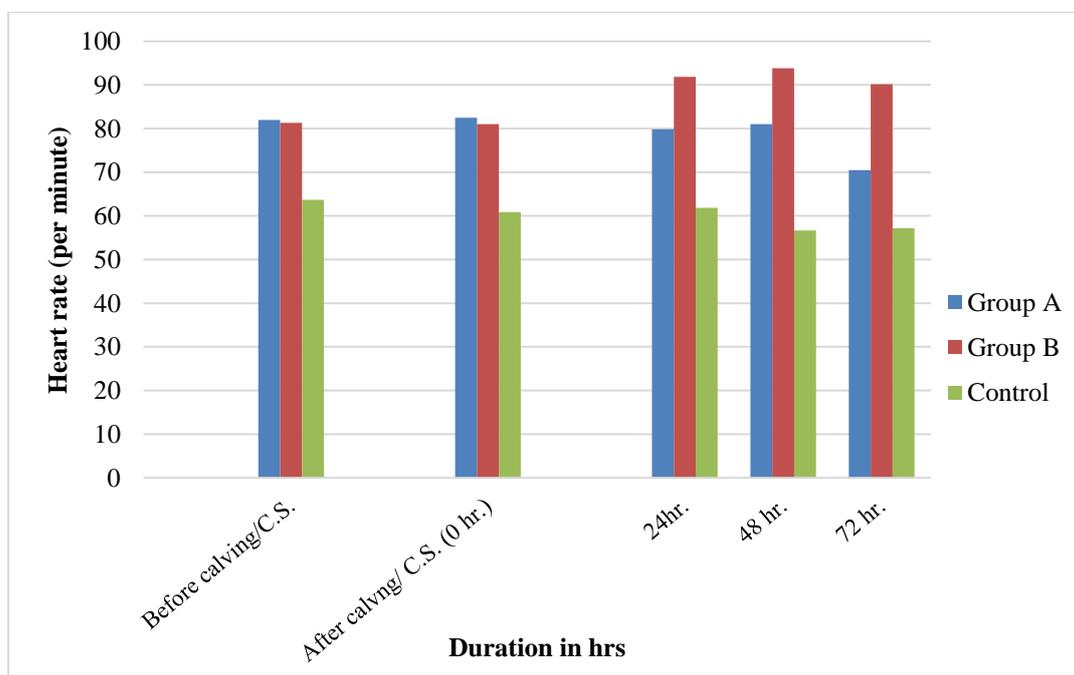
### Heart rate (per minute)

Result of heart rate has been shown in Table 2 and illustrated in Fig 3 and 4.

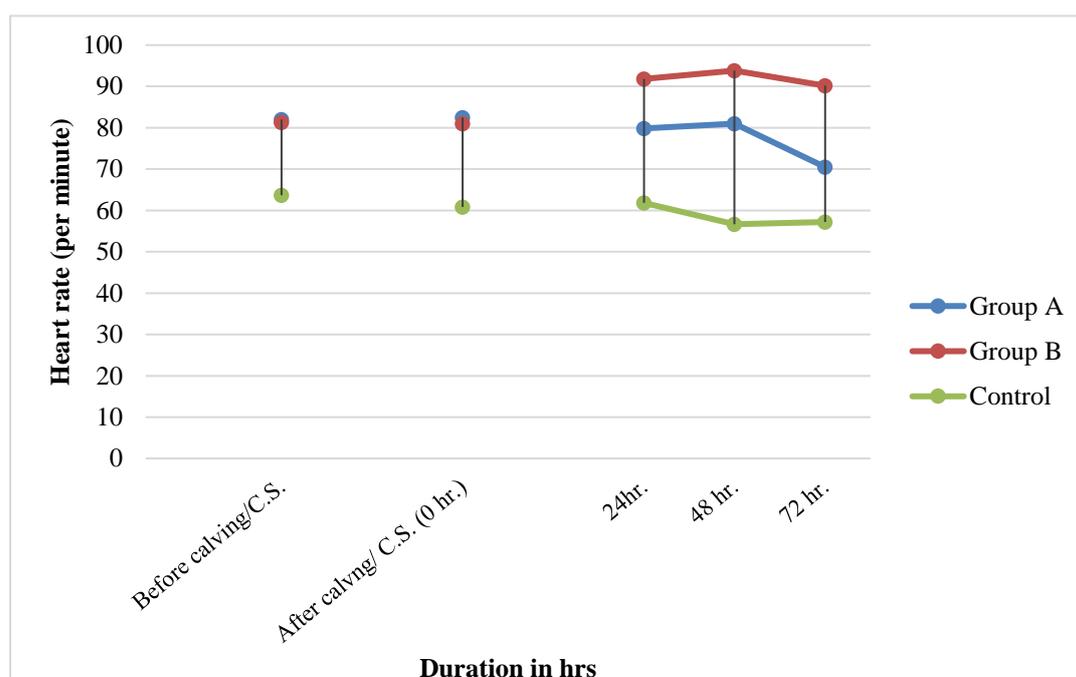
**Table 2: The average values of heart rate per minute (Mean  $\pm$ SE) in cows at different time intervals (Normal range being 48-84 per minute, Dukas 2013)**

Time	Group A	Group B	Control(Eutocia)
Before calving/C.S.	82 $\pm$ 3.83 <sup>aA</sup>	81.33 $\pm$ 3.96 <sup>aA</sup>	63.67 $\pm$ 2.20 <sup>aB</sup>
After calving/ C.S. (0 hr.)	82.5 $\pm$ 3.44 <sup>aA</sup>	81 $\pm$ 4.43 <sup>aA</sup>	60.83 $\pm$ 1.64 <sup>aB</sup>
24hr.	79.83 $\pm$ 6.72 <sup>aA</sup>	91.83 $\pm$ 8.40 <sup>aA</sup>	61.83 $\pm$ 1.54 <sup>aB</sup>
48 hr.	81 $\pm$ 7.38 <sup>aA</sup>	93.83 $\pm$ 8.46 <sup>aA</sup>	56.67 $\pm$ 1.94 <sup>aB</sup>
72 hr.	70.5 $\pm$ 5.97 <sup>aA</sup>	90.17 $\pm$ 7.12 <sup>aA</sup>	57.17 $\pm$ 1.17 <sup>aB</sup>

Mean bearing common superscripts a (within column) and A, B (within rows) did not differ significantly ( $p > 0.05$ ).



**Fig. 3: Clustered column diagram depicting heart rate (per minute) in dystocia and control animals treated by caesarean section using two different sites**



**Fig. 4: Line diagram showing heart rate (per minute) in dystocia and control animals treated by caesarean section using two different sites**

In group A heart rate was within the normal physiological range at different time intervals. In group B there was non-significant increase in heart rate at 24 hours and normal heart rate was not restored upto 72 hours of caesarean operation.

Our findings also support the observations of (Banerjee, 1982; Berglund *et al.*, 1987; Radostits *et al.*, 1994) who revealed that parturition was followed with some physiological disturbances that were more eminent during dystocia than eutocia as a result of some changes in the animal's body to meet the more stressful situation of dystocia.

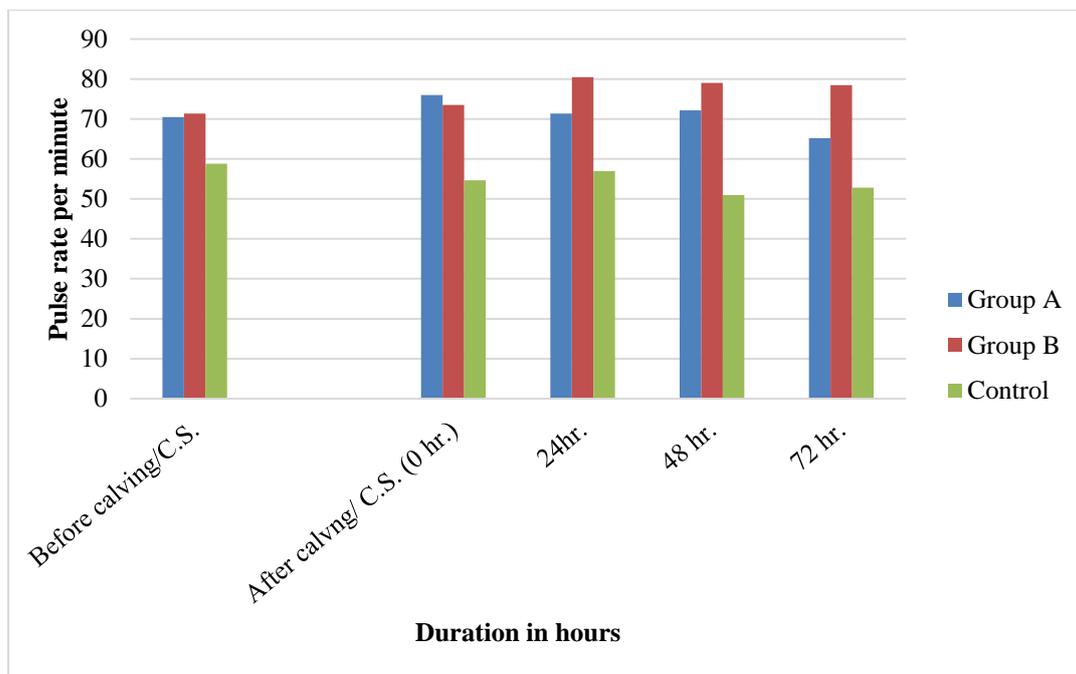
#### **PULSE RATE (per minute)**

Results of pulse rate has been shown in Table 3 and illustrated in Fig 5 and 6.

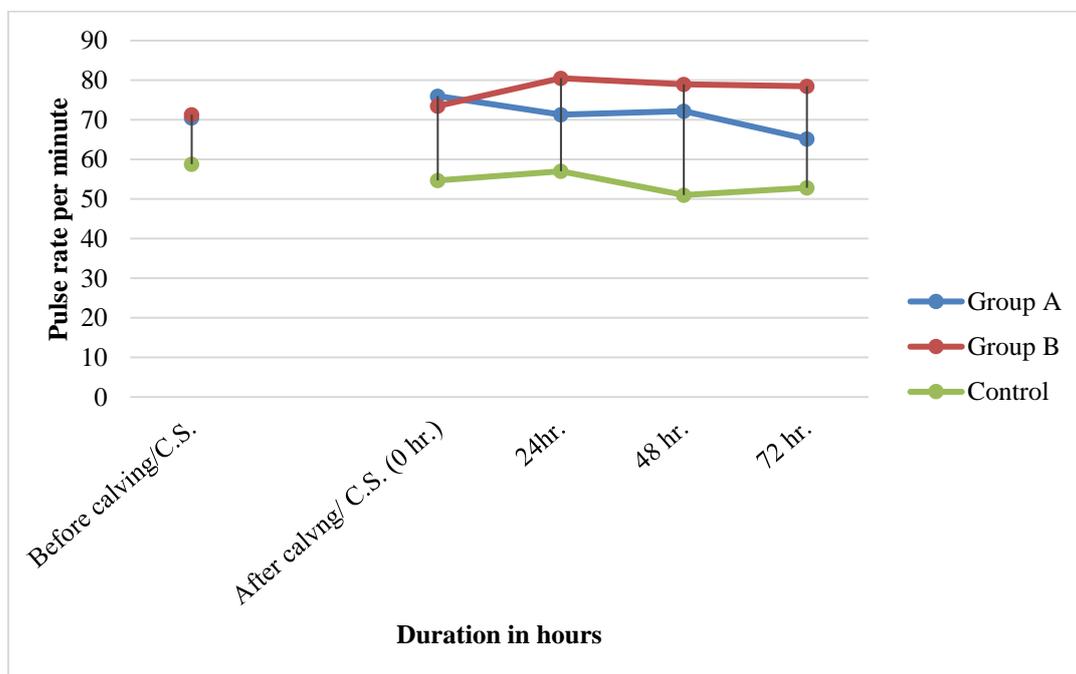
**Table 3: The average values of pulse rate per minute (Mean  $\pm$ SE) in cows at different time intervals (Normal range being 45-60 per minute; Black 2010)**

Time	Group A	Group B	Control (Eutocia)
Before calving/C.S.	70.5 $\pm$ 2.19 <sup>aA</sup>	71.33 $\pm$ 4.38 <sup>aA</sup>	58.83 $\pm$ 2.55 <sup>aB</sup>
After calving/ C.S. (0 hr.)	76 $\pm$ 3.18 <sup>aA</sup>	73.5 $\pm$ 3.81 <sup>aA</sup>	54.67 $\pm$ 2.35 <sup>aB</sup>
24hr.	71.33 $\pm$ 5.16 <sup>aA</sup>	80.5 $\pm$ 5.21 <sup>aA</sup>	57 $\pm$ 1.37 <sup>aB</sup>
48 hr.	72.17 $\pm$ 5.51 <sup>aA</sup>	79 $\pm$ 5.01 <sup>aA</sup>	51 $\pm$ 2.46 <sup>aB</sup>
72 hr.	65.17 $\pm$ 5.35 <sup>aB</sup>	78.5 $\pm$ 5.30 <sup>aA</sup>	52.83 $\pm$ 1.70 <sup>aC</sup>

Mean bearing common superscripts a (within column) and A, B, C (within rows) did not differ significantly ( $p > 0.05$ ).



**Fig. 5: Clustered column diagram depicting pulse rate (per minute) in dystocia and control animals treated by caesarean section using two different sites**



**Fig. 6: Line diagram showing pulse rate (per minute) in dystocia and control animals treated by caesarean section using two different sites**

There was significant increase in pulse rate in both the group A and B when compared with control group before caesarean operation. At 72 hours the values restored to near normal in group A and control but not in group B. Our findings are validated with the findings of

Derar and Rahman (2012) who observed that pulse rates of heifers and cows with dystocia were significantly increased before parturition as compared with those of eutocia.

### RESPIRATION RATE (per minute)

Results of respiration rate has been shown in Table 4 and illustrated in Fig 7 and 8.

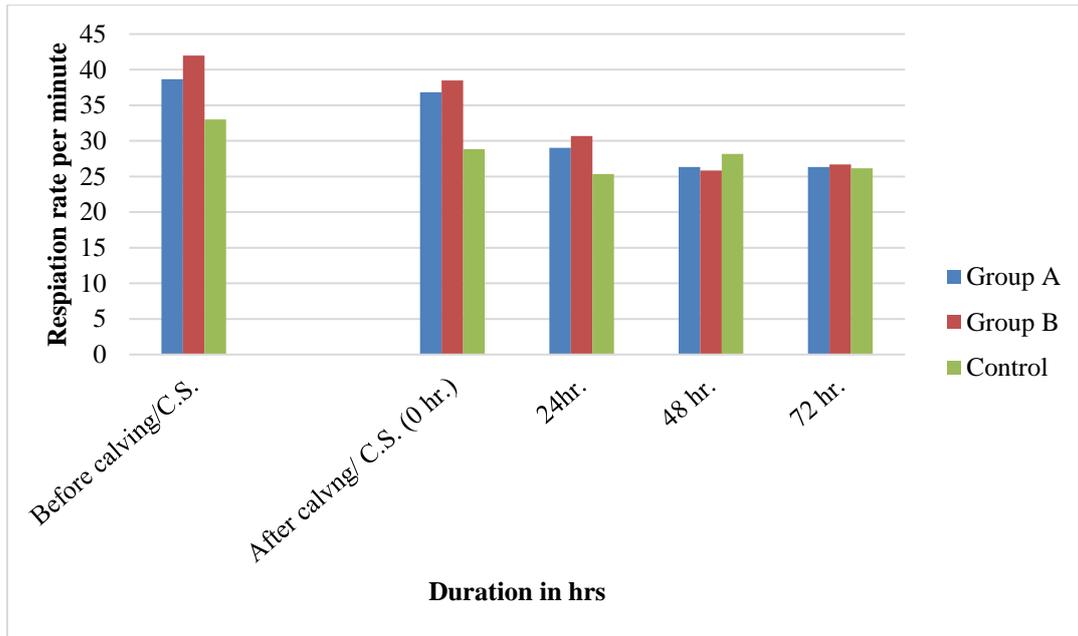
**Table 4: The average values of respiration rate per minute (Mean  $\pm$ SE) in cows at different time intervals (Normal range being 26-35 per minute, Dukes, 2013)**

Time	Group A	Group B	Control (Eutocia)
Before calving/C.S.	38.67 $\pm$ 1.12 <sup>aB</sup>	42 $\pm$ 1.67 <sup>aA</sup>	33 $\pm$ 1.13 <sup>aC</sup>
After calving/ C.S. (0 hr.)	36.83 $\pm$ 1.66 <sup>aA</sup>	38.50 $\pm$ 1.41 <sup>bA</sup>	28.83 $\pm$ 0.79 <sup>bB</sup>
24hr.	29.00 $\pm$ 1.37 <sup>bA</sup>	30.67 $\pm$ 1.80 <sup>cA</sup>	25.33 $\pm$ 0.49 <sup>bB</sup>
48 hr.	26.33 $\pm$ 0.49 <sup>bA</sup>	25.83 $\pm$ 0.54 <sup>dA</sup>	28.17 $\pm$ 0.31 <sup>bA</sup>
72 hr.	26.33 $\pm$ 0.56 <sup>bA</sup>	26.67 $\pm$ 0.61 <sup>dA</sup>	26.17 $\pm$ 1.30 <sup>bA</sup>

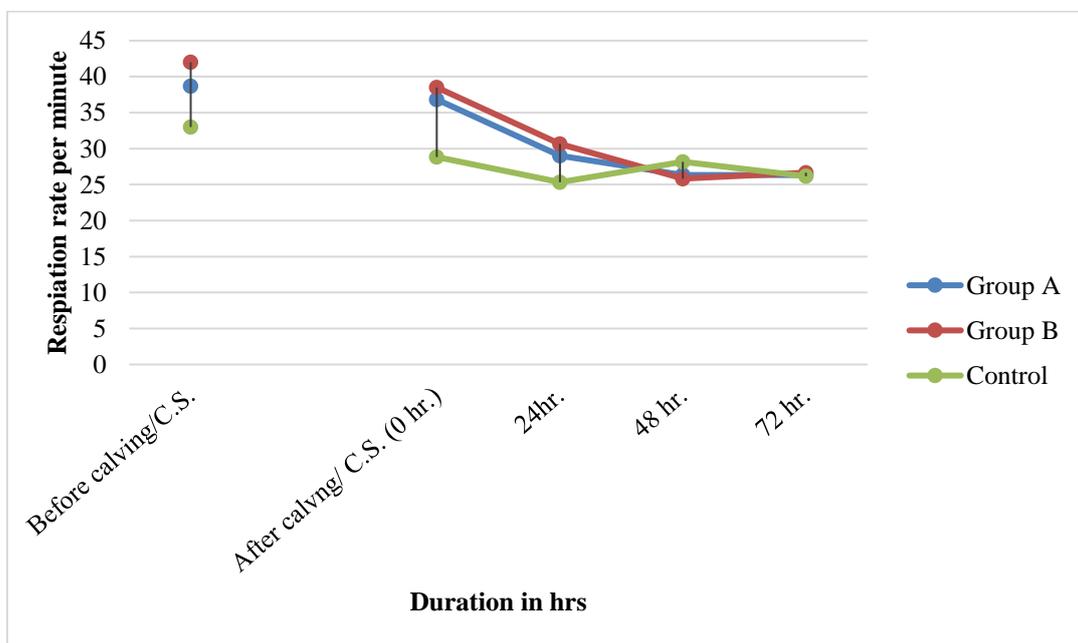
Mean bearing common superscripts a, b (within column) and A, B (within rows) did not differ significantly ( $p > 0.05$ ).

In group A and B, there was significant increase in respiration rate before caesarean operation. At 24 hours after caesarean operation there was significant decrease in respiration rate in all the groups. Thereafter normal respiration rate was restored in all the groups. Our findings are in accordance with Derar and Rahman (2012) who observed increased respiration rate in dystocia cattle just before parturition when compared with eutocia cows.

During stress and other forms of exertion oxygen consumption and carbon-dioxide production increases. The increased respiration is probably due to increased partial pressure of carbon-dioxide in blood (Dukes, 2013).



**Fig. 7: Clustered column diagram depicting respiration rate (per minute) in dystocia and control animals treated by caesarean section using two different sites**



**Fig. 8: Line diagram showing respiration rate (per minute) in dystocia and control animals treated by caesarean section using two different sites**

### Onset of estrum

Results of onset of estrum has been shown in Table 2.

**Table 5: The time of onset of estrum after caesarean operation in cows suffering from dystocia and after normal parturition**

Cases	Group A	Group B	Control (Eutocia)
Case 1	Died after 96 hrs	Died after 6 days	3 months 10 days
Case 2	3 months	Died after 96 hrs	2 months 18 days
Case 3	3 months	4 months	3 months 10 days
Case 4	Died after 72 hrs	2.5 months	2 months 15 days
Case 5	5 months	Died after 5 days	3 months 14 days
Case 6	3 months	4 months 15 days	2 months 1 day

In our study two animals died in group A and three animals died in group B post operatively after few days of the operation, while in control group all the animals were alive.

Our findings authenticate the observations carried out by Barkema *et al.* (1992) who observed no difference in the interval from calving to the first service in the dystocia cows undergoing caesarean operation when compared with cows undergoing normal parturition.

### CONCLUSION

Physiological parameters altered due to changes in the animal's body to meet the more stressful situation of dystocia when compared to eutocia. Recumbent left oblique ventro lateral is a better site to perform the operation in cows.

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