

## COMPARATIVE EVALUATION OF DIFFERENT SURGICAL APPROACHES OF CAESAREAN SECTIONS IN BUFFALOES UNDER FIELD CONDITIONS

G.G. Chandore<sup>1</sup>, S.P. Meshare and M.V. Ingawale

### ABSTRACT

The present research was conducted to evaluate the most suitable of three surgical approaches to caesarean section, namely caudal paramedian incision, right ventro-lateral oblique incision and left ventro-lateral oblique incision, for caesarean section in cases of dystocia in buffaloes under field conditions. In the study, the average age of dystocia affected buffaloes was between 5 and 6 years while 83.33 percent of the affected cases were pluriparous and 16.66 percent were primiparous. The commonest cause of dystocia was irreducible uterine torsion (10 cases - 55.55%) as well as incomplete dilatation of cervix (three cases - 16.66%). Caesarean section in dystocia affected buffaloes could be successfully carried out in lateral recumbent surgical restraint. Left ventro-lateral oblique incision approach was observed to be the most preferred caesarean section approach in lateral recumbent restraint and right ventro-lateral oblique incision was better if intestinal evisceration could be avoided. Caudal paramedian incision approach was successfully used for relieving dystocia due to dead embryomatous and abnormally developed foetuses.

**Keywords:** buffaloes, *Bubalus bubalis*, caesarean sections, surgical approaches, dystocia, India

### INTRODUCTION

India is an extremely rich gold mine of buffalo germplasm resources and harbours all the recognized, high-producing breeds of this species. The buffalo forms the backbone of India's dairy industry and is rightly considered as the 'bearer cheque' of the rural flock considered as India's milking machine (Balain, 1999). India, with 106 million tons, is world's topmost buffalo milk producer accounting for 64 percent of world's total of 49 million tons. According to FAO (2005) statistics on livestock, there are 98 million buffaloes in India, which is about 50 percent of the world buffalo population.

Parturition is a stressful process for buffaloes. In dairy farming, there are various factors, including under-nutrition, periparturient disorders, and improper housing management, which put together make this process difficult. Amongst the several parturition maladies faced by the dairy farmers, dystocia constitutes a major reproductive disorder of vital economic importance because there may be loss of calf and dam together or either of them (Pearson, 1971) as well as subsequent effects on the production potential and fertility of the animals.

Dystocia is a serious and occasionally fatal gynaecological malady. Whenever dystocia is not relieved manually, caesarean section, or

---

<sup>1</sup>Indraprashta Building, Honest Housing Co. Society, Near Housing Corporation, Near Adarwadi Chowk, Kalyan (West)-421302. Maharashtra, India, E-mail: goraksh.chandore@gmail.com

foetotomy, is the only alternative to save the life of dam as well as the calf. Fetotomy is impracticable in cases of irreducible uterine torsion, rupture of uterus, constriction of birth canal etc. Fetotomy is also associated with some disadvantages such as possibility of uterine injuries, uterine infections, and inability to obtain the calf in live condition. These disadvantages can be avoided by undertaking a prompt caesarean operation. Caesarean section is potentially indicated in cases of dystocia when a calf cannot be delivered by foetal rotation and extraction

Caesarean operation is considered as surgery of highest magnitude due to extent of stress involved both due to dystocia and surgical trauma (Cox, 1987). The fact that the level of plasma cortisol increases three to four fold in dystocia suggests lot of stress to the animal (Prabhakar *et al.*, 2002). Bovine practitioners are often presented with dystocia cases that require a caesarean section. Many bovine practitioners perform this surgery using the same approach each time due to their comfort with one specific approach or lack of familiarity of other available options (Schultz *et al.*, 2008). A paramount goal of caesarean section should be to limit the contamination of the peritoneal cavity with uterine contents. The challenge of performing successful caesarean section in buffaloes is often directly related to proper choice of incision approach. So, various incisional approaches have been suggested by several workers (Verma *et al.*, 1974; Noordsy, 1979; Saxena *et al.*, 1989). Hence, present research was conducted to evaluate the most suitable among three surgical approaches to caesarean section, namely caudal paramedian incision, right ventro-lateral oblique incision and left ventro-lateral oblique incision for caesarean section in cases of dystocia in buffaloes under field conditions.

## MATERIALS AND METHODS

The present study of caesarean section operations was carried out on eighteen clinical cases of dystocia in buffaloes at the Veterinary Polyclinic, Miraj, Dist. Sangli, in the area of operation of Kolahapur Zilha Sahakari Dudh Utpadak Sangh Ltd., Kolhapur, Maharashtra State, and the Teaching Veterinary Clinical Complex, Post Graduate Institute of Veterinary and Animal Sciences, Akola, MAFSU, Nagpur (M.S.).

These buffaloes were divided into three groups comprising six buffaloes each and were operated by following incision sites of caesarean section.

- Group A: Caudal paramedian incision (Figure 1)
- Group B: Right ventro-lateral oblique incision (Figure 2)
- Group C: Left ventro- lateral oblique incision (Figure 3)

### Pre-operative treatment and restraining of buffaloes

As these were protracted and emergency cases of dystocia, most of the buffaloes suffered from dehydration, septicemia, toxemia etc. After assessment of dehydration of case fluid therapy using 5% dextrose normal saline along with broad spectrum bactericidal antibiotic was given intravenously. The buffaloes were given antihistaminic 30 to 50 mg /animal i/m, meloxicam 0.2 to 0.3 mg/kg b.wt. i/v and a broad spectrum antibiotic 10 to 20 mg/kg b.wt. i/v before caesarean section. For performing caesarean section in the lateral recumbent position, the buffalo was cast on platform prepared from grass covered with sterile plastic drape. Precautions were taken to prevent a dusty environment. The legs were secured by tying

the two front legs together with a single rope and stretching the legs forward. The rear legs were tied together and were stretched backward. The head of the buffalo was controlled by one person.

### **Anaesthesia and preparation of the site of operation**

All buffaloes were given triflupromazine as pre-anaesthetic 0.2 mg/kg body weight before anaesthesia by the intramuscular route. Local infiltration anaesthesia was produced with 120 to 130 ml of 2% xylocaine (Lignocaine) hydrochloride injection on the respective site of caesarean section depending upon the health status of the buffaloes and requirement in the field condition. The site of operation was prepared for aseptic surgery. First, clipping of hair was performed in a wider area around the site of incision followed by shaving with a razor. The surgical area was scrubbed with antiseptic solution and was painted with tincture iodine. The site of incision was then draped.

### **Operative procedure**

A skin incision of 25 - 30 cm long was taken at the respective site of incision after checking the bleeding points, subcutaneous tissues and muscles were incised in the direction of their lay. The peritoneum was incised and omentum was pushed anteriorly and was packed off with a towel soaked in physiological sterile saline. Every attempt was made to exteriorize the uterus outside the surgical wound in each case of caesarean. The exteriorized part of the uterus was draped with sterile drape and was sealed off from rest of the organs. The incision was given from ovarian end and extended towards the cervix avoiding the cotyledons and every attempt was made to prevent uneven tear of uterus and hemorrhage. While removing the foetus, the position of the dam was changed from

lateral recumbancy to slight sternal position taking due care that no foetal fluids entered the peritoneal cavity of the mother. The incised uterine wall was pulled out and was grasped firmly on either side by the assistant until the foetus and fluid were removed. The foetus was exteriorized by grasping both legs (fore or hind) and was removed gently avoiding uterine tear. The placenta was removed and uterine cavity was cleaned thoroughly with normal saline. Blood clots and any debris of placenta were removed during caesarean in all the cases and 3-4 antiseptic boluses were inserted into the uterine cavity.

The uterine wall was sutured with No. 1/0 chromic catgut by Cushing and Lambert sutures. The suturing was started from the cervical end and was continued towards ovarian end in all the cases. The uterus was cleaned thoroughly with normal saline and blood clots and any debris of placenta were removed from the uterus. About 30 I.U. of oxytocin was injected in all the buffaloes. The uterus was repositioned in the normal location. The peritoneum, abdominus transversus and intra abdominal oblique muscles were sutured together with simple interrupted suture using chromic catgut No 2. The external abdominal muscle was sutured as a second layer with interrupted sutures and this was followed with sub cuticular suture. The skin was sutured using modified vertical mattress. The skin suture was dressed with tincture iodine and was sealed with sterile cotton plug soaked in Compound Tincture Benzoin .

### **Post-operative Care**

The position of the buffalo was changed from lateral to sternal position. A sufficient quantity of fresh drinking water was provided to the buffalo. Fluid therapy was continued post operatively for two to three days using Inj. 5% dextrose saline

intravenous. From the 2<sup>nd</sup> day onwards injection of broad spectrum antibiotics in proper doses was given for 7 days, if required. The analgesic and anti-inflammatory injections was given for 5 days. The dressing was continued with fly repellent antibiotic ointment till wound healing was achieved. The skin suture was removed only after the 13<sup>th</sup> day or after conforming complete healing. The buffaloes were examined per rectum periodically to assess the involution of the uterus and any adhesions. The buffaloes were post-operatively observed for a period of 15 days for any complications such as fever, anorexia, vaginal discharges, wound dehiscence, infection, herniation etc. The buffaloes were given broad spectrum antibiotic 10 to 20 mg/kg b.wt. i/v for 7 days and meloxicam 0.2 to 0.3 mg/kg b.wt. i/v for 5 days, if required.

#### Statistical analysis

The data collected in the present study in were statistically analysed by using analysis of variance as per Snedecor and Cochran (1994).

## RESULTS AND DISCUSSION

In the present study the mean age of dystocia affected buffaloes was between five and six years. Iyer *et al.* (1989) reported dystocia in cows and buffaloes with average age of 2-5 years. The health status of eleven dystocia-affected buffaloes operated for caesarean section was good while in seven buffaloes, the health status was poor and were recumbent at the time of examination. Parkinson (1974) also reported in his study that 75 percent of the buffaloes were recumbent at first sight. Out of eighteen affected buffaloes, fifteen were pleuriparous, while three were primiparous. A similar finding, of high incidence of dystocia in

pleuriparous buffaloes as compared to primiparous was reported by Singh *et al.* (1978).

The commonest cause of dystocia was uterine torsion (10 cases - 55.55%). Holy *et al.* (1960), Verma *et al.* (1974), Saxena *et al.* (1989) and Shiv Prasad *et al.* (2000) also reported uterine torsion as commonest cause of dystocia. The second important casuse of dystocia was incomplete dilation of cervix (3 cases-16.66%). Similar observations were also recorded by Parkinson (1974) and Iyer *et al.* (1989) (16% cases). Other causes of dystocia in the present study include one case each of breech presentation, arthrogryposis foetus, deviated head and neck, foetus with leg defects and dead emphysematous foetus.

#### Restraint in Lateral Recumbancy

In this study, all eighteen caesarean section operations were performed in recumbent restraint position. Animals were restrained properly and were easily controlled in lateral recumbency. In this method of restraint the exteriorization of uterus was easier. With restraint in lateral recumbency uterine spillage was minimum in caudal paramedian incision.

#### Group A: Caudal paramedian incision

In this Group A, six dystocia affected animals were operated with caudal paramedian approach of caesarean section. The technique of performing caesarean section through this approach has been successfully used by Deore (1973). In this approach operative haemorrhage was of small degree. The exteriorization of uterus was intractable. At this approach the operative haemorrhage was seen to a very small degree. Exteriorization of uterus was facile. The average time for removal of sutures in all other cases was 12 days.

**Right ventro-lateral oblique incision**

In this Group B six dystocia affected animals were operated with right ventro-lateral oblique incision approach of caesarean section. The technique of performing caesarean section with approach has been successfully used by Noordsy (1979) in cow.

In this incision approach the operative haemorrhage were of a moderate degree. The exteriorization of uterus was easier. The abdominal closure was easy in all cases. Post-operative herniation was not seen in any case from this group. The average time for suture removal in this group was 12 days. In this approach the operative haemorrhage was to a moderate degree but Verma *et al.* (1974) observed minimum haemorrhage at this site. The exteriorization of uterus was facile. The prolapse of intestines was seen more as compared to left ventro-lateral oblique incision because rumen was preventing the prolapsed of intestine. Similar observations were recorded by Milne (1952) and Noordsy (1979). Muscle relaxation was adequate hence abdominal closure was easy. Milne (1952) has reported that adequate muscle relaxation is

must for efficient abdominal closure.

**Left ventro-lateral oblique incision**

In this Group C, total six dystocia affected animals were operated with left ventro-lateral oblique incision approach of caesarean section. Caesarean section at this approach has been successfully carried out by Verma *et al.* (1974) and Saxena *et al.* (1989) and Shiv Prasad *et al.* (2000).

With this approach operative haemorrhage was greater as compared to other approach. The exteriorization of uterus was facile in all cases. Abdominal closure was easy in all cases. With this approach, operative haemorrhage was greater as compared to other approaches. This is in agreement with Saxena *et al.* (1989) but Verma *et al.* (1974) have described minimum haemorrhage at this site. The exteriorization of uterus was facile. Similar observations are recorded by Milne (1952) and Saxena *et al.* (1989). However, Verma *et al.* (1974) reported that exteriorization of uterus was difficult. The prolapsed of intestine was not seen in any of the cases and spillage into peritoneal cavity was also rarely seen. The post operative infection was

Table 1. Incidence and causes of dystocia.

Sr. No.	Coddition causing dystocia	No. of buffaloes	Percentage	Condition of calf		Sex	
				Live	Dead	Male	Female
	Maternal causes		72.22%	6	12	9	9
1	Uterine torsion	10	55.55%				
2	Incomplete dilation of cervix	3	16-66%				
	Foetal causes		27.77%				
1	Arthrogryposis <i>foetus</i>	1	5.55% each				
2	Breech Presentation	1					
3	Deviated neck & head	1					
4	Legs Defect	1					
5	Dead emphysematous <i>foetus</i>	1					
	<b>Total</b>	<b>18</b>		<b>6</b>	<b>12</b>	<b>9</b>	<b>9</b>



Figure 1. Showing approach of caudal paramedian incision.



Figure 2. Showing approach of right ventro-lateral oblique incision.



Figure 3. Showing approach of left ventro-lateral oblique incision.

not seen in any of the cases Present observations correlated with the observations recorded by Verma *et al.* (1974), Saxena *et al.* (1989).

#### **Comparative evaluation of different approaches of caesarean section**

Eighteen clinical cases of dystocia in buffaloes were operated with three different incision approaches of caesarean section. The operative haemorrhage was minimum in caudal paramedian incision. It was maximum at left ventro-lateral oblique incision and moderate at right ventro-lateral oblique incision. The exteriorization of uterus was easier in caudal paramedian incision but was difficult in some cases of right ventro-lateral oblique incision. Spillage was not observed in left ventro-lateral oblique and caudal paramedian incision while it was seen to a small extent in right ventro-lateral oblique incision. Evisceration of intestines was seen to a moderate degree in caudal paramedian and right ventro-lateral oblique incision, but it was not seen in left ventro-lateral oblique incision. Abdominal closure was difficult in caudal paramedian incision while it was facile in right and left ventro-lateral oblique incision approaches. Post operative infection was seen in two cases operated by the caudal paramedian incision approach and in one each operated by the right ventro-lateral oblique incision approach and the left ventro-lateral oblique incision; these were due to unhygienic conditions in stables under field conditions. Post operative herniation was not seen in any of the cases operated by either of the three approaches of caesarean section. The average healing of wound in all three approaches was 12 days.

#### **CONCLUSION**

The average age of dystocia-affected buffaloes was between 5 and 6 years. In this study 83.33 percent of the affected cases were pluriparous, and 16.66 percent were primiparous. The commonest cause of dystocia was irreducible uterine torsion (10 cases - 55.55%) as well as incomplete dilatation of cervix (3 cases - 16.66%). Caesarean section in dystocia affected buffaloes could be successfully carried out in lateral recumbent surgical restraint. The comparative evaluation of different approaches of caesarean section it was observed that the left ventro-lateral oblique incision is the most preferable approach while the right ventro-lateral incision is better provided effective care of prolapse of intestine is taken and caudal paramedian approach can be used for removal of dead and emphysematous fetus.

#### **REFERENCES**

- Balain, D.S. 1999. *Inflow and outflow of buffalo germplasm resources and their global contribution. Invited papers presented in the short course on "Characterization and conservation of domesticated livestock and poultry resources"*. 10-19 May, 1999, National Bureau of Animal Genetic Resources (ICAR), Karnal, India.
- Cox, J.E. 1987. *Surgery of the Reproductive Tract in Large Animals*. Liverpool University Press. p. 145-170.
- Deore, P.A. 1973. Caesareotomy in large buffaloes. *Indian Vet. J.*, **50**: 1131-1133.
- FAO. 2005. Bulletin of Statistics. *Food and Agriculture Organization of the United Nations*, **5**(1): 31.

- Holy, L., J. Hrivnak and E. Kudlae. 1960. A review of 168 cases of uterine torsion. *Vet. Cas.*, **9**: 23.
- Iyer, M.R.K., T.P. Raghuprasad and M. Jacob .1987. Caesarean section bovine- an analysis of 36 clinical cases. *Kerala Journal of Veterinary Science*, **18**(1): 71-76.
- Milne, F.J. 1952. Bovine caesarean section, observations on different approaches. *Vet. Rec.*, **64**: 229-231.
- Noordsy, J.L. 1979. Selection of site for caesarean section in the cow. *Vet. Med. Sm. Anim. Clin.*, **74**: 530-537.
- Parkinson, J.D. 1974. Bovine caesarean section in general practice. *Vet. Rec.*, **95**: 508-512.
- Pearson, H. 1971. Uterine torsion in cattle: A review of 168 cases. *Vet. Rec.*, **B** : 597-603.
- Prabhakar, S., A.S. Nanda and S.P.S. Ghuman. 2002. Changes in plasma cortisol concentration as an index of stress due to dystocia and obstetrical manoeuvring in buffaloes. *Indian J. Anim. Sci.*, **72**: 309-311.
- Saxena, O.P., A.C. Varshney, N.S. Jadon, U.K. Sharma and Y.R.S. Dabus. 1989. Surgical management of dystocia in bovines: A clinical study. *Indian Vet. J.*, **65**: 562-566.
- Shiv Prasad, Kumar Rohit and S.V. Maurya. 2000. Efficacy of laparohysterotomy and rolling of dam to treat uterine torsion in buffaloes. *Indian Vet. J.*, **77**: 784-786.
- Singh, J., Banaras Prasad and S.S. Rathor. 1978. Torsion uterine in buffaloes (*Bubalus bubalis*): An analysis of 65 cases. *Indian Vet. J.*, **55**: 161-165.
- Snedecor, G.W. and W.C. Cochran. 1994. *Statistical Methods*, 8<sup>th</sup> ed. The Iowa state Univ. Press Ames, Iowa, USA.
- Verma, S.K. and R.P.S. Tyagi and Murlimanohar. 1974. Caesarean section in bovines: A clinical study. *Indian Vet. J.*, **51**: 471-479.