

Research article**Management of incomplete cervical dilation in a Jersey crossbred cow**

Dev, S., Sultana, I., Dey, T., and B.C. Sutradhar

Department of Medicine and Surgery, Chittagong Veterinary and Animal Sciences University, Chittagong-4225, Bangladesh

ARTICLE INFO*Article history :*

Received: 17/06/2016

Accepted: 22/08/2016

Keywords :

Dystocia, cervical dilation, cow, fetotomy

** Corresponding Author :*Email: bibeksd@yahoo.com

Cell : +88-01711057533

ABSTRACT

A pluriparous Jersey crossbred cow was presented in the Large Animal Obstetrics out Patient Unit of Madras Veterinary College Teaching Hospital, TANUVAS, Tamilnadu, India with the history of labour pain. Defecation and urination was normal. The case was diagnosed as improper dilation of cervix and was treated with Cloprostenol Sodium, Dexamethasone and Valethamate bromide. Per-vaginal examination revealed an indurated cervix with no fetal movement. The dead fetus was removed by snare fetotomy under tranquilization and local analgesia. The cow had normal appetite after five days of postoperative treatment.

To cite this paper : Dev, S., Sultana, I., Dey, T., and B.C. Sutradhar. 2016. Management of incomplete cervical dilation in a Jersey crossbred cow. *Bangladesh Journal of Veterinary and Animal Sciences*, 4: 05-08

1. INTRODUCTION

Abnormal or difficulty in giving birth is referred to as dystocia (Youngquist et al., 2007). There are two types of factors that lead to incidence of dystocia in cow. Firstly, the fetal factors which include oversized fetus, fetal malpresentation, malposition, postural defects and congenital abnormalities. Secondly, the maternal factors which include over feeding of dam during pregnancy, uterine inertia in pluriparous, and incomplete cervical dilation (Pugh et al., 2012). Cervical priming is the first stage of labor in large ruminants and is a gradual process of dilatation and softening of cervix (Jackson, 2004). A wide variety of changes in the hormonal milieu (Sharma et al., 1992 and Kindahl, 2000), enzymatic loosening of fibrous strands by elevated collagenase (Rajabi et al. 1988) and the physical forces of the uterine contractions and fetal mass are considered to be responsible to effect sufficient dilatation of the cervix during parturition in the cow (Breeveld et al., 2003). An activation of inflammatory network is considered to play an important role in the progress of cervical dilation (Maul et al., 2002). An increase in inflammatory

cytokines during parturition is known to effect dilation (Kemp et al., 2002) as is the interplay of hormones and failure of cervix to dilate completely is a common cause of dystocia in large ruminants (Das and Chowdhury, 2014). Incomplete cervical dilatation in multiparous cows may be associated with uterine inertia caused by hypocalcaemia (Noakes *et al.*, 2002). The incidence of cervical dystocia was seen to be from 11.1 to 16.7 percent (Wehrend and Bostedt, 2003) in cows. In a study by (Srinivas et al., 2007), the incidence of incomplete dilatation of cervix was 13.1 percent (Wehrend and Bostedt, 2003), which was relieved by allowing finite amounts of time; therapy to cause cervical dilatation and cesarean section in cases with therapeutic failure, with an overall dam survival rate of 81.8 percent. Fetal dystocia is encountered quite often in abortive attempts in a dam. Studies have also shown that cranial malpresentation are common in buffalo dystocia (80-85%) (Srinivas et al., 2007). Carpal, shoulder flexion and lateral head deviation are the most common forms of maldisposition in cranial presentation of the fetus resulting in dystocia in cattle and buffalo (Sane et al. 1994). The present

report describes the successful management of a case of dystocia in cow from contracting cervix with fetal maldisposition.

2. CLINICAL HISTORY AND OBSERVATION

A pluriparous adult Jersey crossbreed cow was presented in the Large Animal Obstetrics out Patient Unit of Madras Veterinary College Teaching Hospital, TANUVAS, Tamilnadu in India with the history of labour pains initiated one days before. The cow had completed 260 days of gestation and was attended by a local veterinarian for relieving dystocia. The cow had calved once earlier and there was no history of any complication during the previous parturition. Water bags had ruptured one day before. On general examination, the cow appeared dull, depressed and dehydrated as assessed from moistening of muzzle. The cow was anorectic for last two days. Defecation and urination was normal. Udder engorgement and relaxation of sacrosciatic ligament were absent. Per-vaginal examination revealed an indurated cervix, indicating its secondary complications (Figure 1). The cervical canal allowed the entry of three fingers and fetal parts could not be palpated to identify the presentation and position. On the basis of close inspection and physical examination, the case was diagnosed as dystocia due to incompletely dilated cervix in the cow.

3. TREATMENT AND DISCUSSION

The treatment was initiated by administering Cloprostenol Sodium (Cyclix, IntervetPvt Ltd. India) 526 µg, Dexamethasone 40 mg (Dexona, Zydus Animal Health Ltd. India) and Valethamate bromide 70 mg (Epidosin, TTK, Healthcare Ltd. India) intramuscularly. Vaginal examination was performed regularly at every 12 hours interval. At 24 hours of treatment, cervical relaxation progressed up to one hand. The fetus was presented in anterior longitudinal presentation, dorsal position and with bilateral shoulder flexion as posture. Following low epidural anaesthesia (5 ml; 2% Lignocaine hydrochloride, India), animal was restrained by casting position. Birth canal was lubricated with ample quantity of Carboxy methyl cellulose gel. Snare was applied to the mandible of dead fetus and repelled the head deep into the pelvic cavity to make space for correction. Then the right limb was tried to grasp and brought up into the carpal flexion position. But it could not be possible to do so due to lack of enough space. So an obstetrical hook was applied at the inner canthus of eye and traction was done with the help of assistants (Figure 2). Then

after few minutes of traction the fetal head came outside.

The fetal head was decapitated by scalpel at atlanto-occipital joint in order to make enough space in the birth canal (Figure 3 and 4). Then the right forelimbs were located and manipulated and the right shoulder flexion was converted to carpal flexion by pulling the part below shoulder joint in upward direction. The carpal joint was pushed upward and made it into carpal flexion. The same procedure was repeated to correct the other forelimb. Both the forelimbs were snared with calving ropes and traction was applied manually with the help of assistants (Figure 5). With little traction the other body parts of fetus was delivered (Figure 6). After delivery the uterus and the birth canal were checked for signs of damage and hemorrhage. Following delivery, the cow was treated with injection 2.5 gm Streptopenicillin b.i.d for 5 days (i/m), Normal saline solution (0.9% sodium chloride) 5 liters daily for 2 days (i/v), Calcium borogluconate (350 ml slow i/v and 150 ml s/c) and Meloxicam (100 mg i/m.) for 5 days.

A deficiency of estrogen is considered to be one important cause of failure of cervical dilation (Zhang *et al.*, 1999) hence, injection of estrogens like estradiol valerate 20-30 mg i/m can be helpful, and however, estrogen should be given with care in a completely closed cervix because of the dangers of uterine rupture that may follow because of violent contractions. Likewise, injections of Oxytocin 20-40 IU, i/v or i/m can be given to promote uterine contraction to effect cervical dilation when it is partially dilated. When the legs of a putrefied dead fetus are present in the birth canal and the fetus cannot come out because of incompletely dilated cervix, partial cervicotomy is suggested instead of a cesarean section (Purohit *et al.*, 2002). One or two cuts applied on the cervix are usually sufficient to deliver the calf. Potent analgesics like valethamate bromide (Inj. Epidosin TTK Pharma, India) at the dose rate of up to 500 mg i/m or i/v is of limited value in dilating a closed bovine cervix (Purohit *et al.*, 2002). β_2 adrenergic drugs like isoxsuprine at doses of 200 - 300 mg i/v or 0.3 mg i.v. clenbuterol have been suggested to relax the entire genital tract including the cervix but may not be always helpful because of the complex mechanism that is responsible for cervical dilation which largely remains poorly understood. Moreover, the β_2 adrenergic drugs would reduce uterine contractions and hence delay parturition. Caesarean section appears to be the best resort when all attempts at cervical dilation have failed. Administration of PGF 2α along with Valethamate

bromide is the recommended treatment in such cases to facilitate dilatation of cervix. Singh et al. (2003) used a combination of PGF₂ α , Valethamate bromide and Diethylstilbesterol successfully in dilating cervix to expel a mummified fetus. In a similar type of clinical case of abortion with incomplete cervical dilatation, Mishra et al. (2004) used combination of PGF₂ α , Valethamate bromide, Dexamethasone and Diethylstilbestrol along with hot fomentation of anterior vagina for 15 minutes thrice at every two hours and reported sufficient dilatation of cervix at 24

hours. However, in the present case hot fomentation was not applied and the combination of treatment did not include Diethylstilbesterol which may results for non-satisfactory dilatation of the cervix. In an another study Das et al. (2008) reported use of PGF₂ α along with Valethamate bromide successfully dilated cervix in a buffalo after 23 hours of administration in a dystocia case. However, present communication confirms earlier studies that PGF₂ α along with Valethamate bromide may not always be successfully used to dilate cervix.



Figure 1 : Vaginal Palpation



Figure 2 : Traction with Hook



Figure 3 : Decapitation of fetal head



Figure 4 : Cloven head of fetus



Figure 5 : Traction of body of the fetus



Figure 6 : Calf after decapitation

4. CONCLUSION

After consideration of factors rapidly, the occurrence of dystocia can be prevented or treated quickly to save the lives of the dam and the fetus as well as to prevent economic losses. In this case, the fetus was dead for which the fetotomy was done. But if the fetus were alive then caesarian section would be better in order to get live fetus. The prognosis of the cow was good

but poor for further breeding, because the incidence of dystocia may occur again. It is therefore recommended that more elaborate epidemiological studies can be done to ascertain the immediate and remote causes of dystocia in cow due to incomplete cervical dilatation with a view to elucidating the risk factors involved.

REFERENCES

- Azawi, O. I. 2008. Postpartum uterine infection in cattle. *Animal Reproduction Science*, 105(3), 187-208.
- Breeveld-Dwarkasing, V. N., Struijk, P. C., Lotgering, F. K., Eijkskoot F., Kindahl, H., Van Der Weijden G. C. and Taverne, M. A. 2003. Cervical dilatation related to uterine electromyographic activity and endocrinological changes during prostaglandin F₂α-induced parturition in cows. *Biology of Reproduction*, 68(2), 536-542.
- Chang Zhang, W., Nakao, T., Moriyoshi, M., Nakada, K., Ribadu, A.Y., Ohtaki, T., and Tanaka, Y. 1999. Relationship of maternal plasma progesterone and estrone sulfate to dystocia in Holstein-Friesian heifers and cows. *Journal of Veterinary Medical Science*, 61: 909-913.
- Das, G. K., Dutt, R., Deori, S., Jaglan, P., Kumar, P., Gokuldas, P. P. and Shanker, U. 2008. Incomplete cervical dilatation causing dystocia in a buffalo. *The Indian Journal of Veterinary Research*, 17: 41-43.
- Das, K. K., and Choudhary, M.D. 2014. Therapeutic management of incomplete cervical dilatation in a cow. *Intas Polivet*, 15 (2) : 300-302.
- Jackson P.G. 2004. *Handbook of veterinary obstetrics*. 2nd edition, Elsevier Science Limited. Pp: 42-43.
- Kemp, B., Menon, R., Fortunato S. J., Winkler, M., Maul, H., Rath, W. 2002. Quantization and localization of inflammatory cytokines, interleukin-6 and interleukin-8 in the lower uterine segment during cervical dilation. *Journal of Assisted Reproduction and Genetics*, 19: 215-219.
- Kindahl, H. 2000. Endocrine changes in late bovine pregnancy with special emphasis on fetal well-being. *Domestic Animal Endocrinology*, 23: 321-328.
- Mishra, S., Singh, M., Thakur, S., Sharma, A and Vasistha, N. K. 2004. Management of incomplete Cervical dilatation in an aborting cow- A case report. *Intas Polivet*, 5: 154-158.
- Maul, H., Nagel, S., Welsch, G., Schäfer, A., Winkler, M., and Rath, W. 2005. Messenger ribonucleic acid levels of interleukin-1 beta, interleukin-6 and interleukin-8 in the lower uterine segment increased significantly at final cervical dilatation during term parturition, while those of tumor necrosis factor alpha remained unchanged. *European Journal of Obstetrics, Gynecology and Reproductive Biology*, 1: 143-147.
- Pugh, D. G, and Baird, N. N. 2012. *Sheep and goat medicine*. Elsevier Health Sciences. Philadelphia: WB Saunders Co, Pp: 129-186.
- Purohit, G. N., Barolia, Y., Shekhar, C., and Kumar, P. 2011. Maternal dystocia in cows and buffaloes: a review. *Open Journal of Animal sciences*, 1: 41.
- Rajabi, M. R., Dean, D. D., Beydoun, S. N., and Woessner, J. F. 1988. Elevated tissue levels of collagenase during dilation of uterine cervix in human parturition. *American Journal of Obstetrics and Gynecology*, 159: 971-976.
- Sane, C. R, Kaikini, A. S, Luktuke, S. N, Hukeri, V. B, Deshpande, B.R., Velhankar, D.P., Kodagali, S.B. and Deopurkar, V. L. 1994. *Reproduction in Farm Animals*. 2nd edn. Verghese Publishing House, Mumbai. Pp: 72-74.
- Sharma, R. D., Dhaliwal, G. S., Prabhakar, S., and Nanda, A. 1992. Percutaneous fetotomy in management of dystocias in bovines. *Indian Veterinary Journal*, 69 : 443-445.
- Singh, M., Sharma, R., Singh, K. D., Vasishta, N. K. and Sood P. 2003. Management of fetal mummification in a cow - a case report. *Himachal Veterinary Journal*, 5: 334-335.
- Srinivas, M., Sreenu, M., Lakshmi Rani, N., Subramanyam Naidu, K., and Devi Prasad, V. 2007. Studies on dystocia in graded Murrah buffaloes: A retrospective study. *Buffalo Bulletin*, 26: 40-45.
- Wehrend, A., and Bostedt, H. 2003. The incidence of cervical dystocia and disorders of cervical involution in the post-partum cow. *Deutsche Tierärzli the Wochen-schrift*, 110: 483-486.
- Youngquist, R.S., and Threlfall, W. R. 2007. *Current therapy in theriogenology (large animal 2nd Edition)*. Elsevier Health Sciences. Baltimore, 1998, Pp: 84-94.