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Surgical management of dystocia due to incomplete cervical dilatation concurrent with fetal emphysema in a Jersey crossbred cow

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Abstract

A seven years old full term pregnant pluriparous Jersey crossbred cow was presented to Large Animal Obstetrical Unit, VCRI, Salem with the history of restlessness, straining and inappetence for 24 hours. Vaginal examination revealed three finger dilatation of cervix with discharge of fetal fluid from the uterus. Rectal examination revealed that fetal head and forelimbs were located in pelvic cavity. Based on clinical examination, the case was diagnosed as dystocia due to incomplete cervical dilatation. The animal was treated with cloprostenol, valethamate bromide and dexamethasone to cause dilatation of cervix, but the attempt was futile. Therefore, it was decided to perform the caesarean section as per standard procedure and a dead emphysematous fetus was removed. Post operatively the animal was treated with antibiotic, anti-inflammatory, antihistamines, ecbolics, IV fluids for 5 days. The cow recovered uneventfully and become active after completion of the treatment.

Keywords: Incomplete cervical dilatation, fetal emphysema, C-section, jersey crossbred cow

Introduction

Dystocia due to incomplete cervical dilatation is seen occasionally in the cow and the ewe and very rarely in other domestic animals (Roberts, 1971) ^[1]. Failure of cervical dilatation is due to number of causes i.e. cervical induration, primary uterine and cervical inertia, secondary uterine inertia with cervical involution and in the early stages of normal parturition (Shivika Chouksey *et al.*, 2022) ^[2]. Incomplete cervical dilatation is more likely to be due to hormonal dysfunction which normally causes the cervix to ripen, or it is a failure of cervical tissue to respond (Noakes *et al.*, 2001) ^[3]. Incomplete cervical dilatation in multiparous cows may be associated with uterine inertia caused by hypocalcemia. Caesarean section is indicated if it does not respond to medical treatment with hormones and drugs (Gahlot *et al.*, 2017) ^[4]. Fetal emphysema is usually associated with a prolonged dystocia of 24 to 48 hours duration. The fetus dies and organisms from the vagina pass through the open cervix, invade the uterus and cause rapid fetal emphysema (Roberts, 1971) ^[1]. The present paper describes management of dystocia due to incomplete cervical dilatation concurrent with fetal emphysema through caesarean section in a Jersey crossbred cow.

Case history and Observation

A seven years old full term pregnant pluriparous Jersey crossbred cow was presented to Large Animal Obstetrical Unit of Veterinary Clinical Complex, Veterinary College and Research Institute, Salem with the history of restlessness, straining and inappetence for 24 hours. On clinical examination, all the vital parameters were within the normal range. Vaginal examination revealed three finger dilatation of cervix with discharge of fetal fluid from the uterus. Rectal examination revealed that fetal head and forelimbs were located in pelvic cavity. Rectal examination also revealed absence of fetal movements and fremitus indicating dead fetus. Based on clinical examination, the case was diagnosed as dystocia due to incomplete cervical dilatation.

Treatment and Discussion

The animal was treated for dilatation of cervix by administration of Cloprostenol 500 µg i/m, Dexamethasone 40 mg i/m, Valethamate bromide 50 mg i/m, Calcium borogluconate 450 ml i/v and 25% Dextrose 500 ml i/v.

Vaginal examination was performed regularly at every 12 hours interval and there was no change in the dilatation of cervix after 48 hours. Hence, it was decided to perform the caesarean section by left flank incision under paravertebral nerve block with 2% lignocaine hydrochloride using left ventro-lateral (Oblique) approach. As per the standard procedure, about 15 inches long incision was made on skin and muscles were severed (Fig. 1). Gravid uterine horn was taken out and was packed with draper to prevent leakage of uterine contents into peritoneal cavity. About 8 inch long incision by using scalpel was made on the gravid horn. A dead emphysematous female fetus was removed through uterine incision (Fig. 2).



Fig 1: Abdominal muscle incision



Fig 2: Dead emphysematous fetus

After removal of the emphysematous fetus, the uterus was cleaned with Normal Saline and Metronidazole. The uterine incision was closed with Cushing's followed by Lambert suture pattern using PGA-2 (Fig. 3). The abdominal muscles were closed with continuous interlocking suture pattern by using PGA-2. Finally, the skin was closed by cross mattress suture pattern with silk (Fig. 4). The crossbred cow was treated post-operatively with Streptopenicillin 5 gm i/m, Meloxicam @ 0.5 mg/kg b.wt i/m, Chlorpheniramine maleate @ 0.5 mg/kg b.wt i/m and 40 IU of Oxytocin i/m. Antibiotic, anti-inflammatory, oral ecbolics and supportive therapy were continued for five days and skin sutures were removed after 14 days. The cow recovered uneventfully and become active after completion of the treatment.

Cervical dilatation is a key event for the successful vaginal delivery of young ones. Failure of cervical dilatation occurs due to alterations in the cervical ripening mechanism or insufficient uterine contraction. Cervical ripening is a multifactorial process which is an outcome of hormonal regulation, inflammatory process and enzymatic breakdown of collagen (Gahlot *et al.* 2017) [4]. Alteration in hormonal

concentration including steroids, prostaglandin and relaxin at term may be a factor in poor cervical ripening. Incomplete cervical dilatation is a disorder of the ruminant cervix, since the cervix is a tough fibrous structure with substantial amounts of collagen in cattle, goat and sheep (Noakes *et al.*, 2001) [3].

Incomplete cervical dilatation in multiparous cows may be associated with uterine inertia caused by hypocalcemia. Further, improper cervical dilatation in cattle may be the result of uterine torsion, twin pregnancy, premature birth, cervical induration and secondary uterine inertia with cervical involution (Gahlot *et al.*, 2017) [4]. The degree of incompleteness of dilation varies from complete closure, to just a small frill of cervical tissue, which is sufficient to reduce the size of the birth canal thereby causing obstruction (Noakes *et al.*, 2001) [3]. In the present case, 3 finger dilatation of cervix was noticed.

For the management of incomplete cervical dilatation, hormones and drugs like estradiol, $\text{PGF}_{2\alpha}$, PGE_2 , valethamate bromide, dexamethasone and calcium borogluconate in various combination have been reported to be effective in causing dilatation of cervix in cattle (Balamurugan *et al.* 2018; Sagar *et al.* 2021; Ashitha *et al.* 2021) [5-7]. Caesarean section is a one of the best tools for management of incomplete cervical dilatation in cattle if other treatment fails to resolve (Shivika Chouksey *et al.*, 2022) [2]. In the present case, the cow was treated with $\text{PGF}_{2\alpha}$, dexamethasone, valethamate bromide and calcium borogluconate. However, there was no change in the dilatation of cervix after 2 days of the treatment. Therefore, it was decided to perform the caesarean section and a dead emphysematous fetus was removed. Successful surgical management of incomplete cervical dilatation in cow was also reported by Mahesh *et al.* (2015) [8].



Fig 3: Uterine incision closure



Fig 4: Skin closure

Fetal emphysema is usually associated with a prolonged dystocia of 24 to 48 hours duration. The fetus dies and organisms from the vagina pass through the open cervix, invade the uterus and cause rapid fetal emphysema (Roberts, 1971) [1]. In the present case, the animal was brought to the hospital 24 hours after onset of straining and the fetus was found dead at the time of clinical examination. Further, the animal was treated and observed 48 hours for cervical dilation. Hence, a dead fetus at body temperature and 3 finger dilatation of cervix might have caused fetal emphysema during the waiting time. Successful surgical management of fetal emphysema in cow was also reported by Sameer Ali *et al.* (2020) [9]. The present case reports dystocia due to incomplete cervical dilatation concurrent with fetal emphysema in a Jersey crossbred cow and its successful management through caesarean section.

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