

Successful Management of Dystocia Due to Incomplete Cervical Dilatation by Intra-Cervical Application of PGE₁ Analogue (Misoprostol) In Jersey Crossbred Cattle

S. Ashitha¹, U. S. Kalyan², N. Arunmozhi^{2*}, S. Rangasamy², R. Sureshkumar³, K. Krishnakumar⁴ and T. Sarath³

¹PhD Scholar, Department of Veterinary Gynaecology and Obstetrics, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai, INDIA

²Assistant Professor, Department of Veterinary Gynaecology and Obstetrics, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai, INDIA

³Assistant Professor, Department of Clinics, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai, INDIA

⁴Professor and Head, Department of Veterinary Gynaecology and Obstetrics, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai, INDIA

*Corresponding Author: drarunmozhivet@gmail.com

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Abstract

Two Jersey crossbred cattle, a 2-year-old heifer and a six-year-old cow, were presented to the Large Animal Obstetrics Unit, Madras Veterinary College Teaching Hospital with the history of full-term pregnancy and straining for the past 12 and 18 hours, respectively. Per vaginal examination revealed a one finger and two fingers dilation (respectively) of the cervix and a yellow, mucoïd discharge was observed in both the animals. Both cases were diagnosed as dystocia due to incomplete cervical dilation. The animals were treated with dexamethasone (40 mg I/M) and synthetic PGF₂ α (cloprostenol, 500 μ g, I/M). After 24 hours, examination revealed no change in the progress of cervical dilation. They were then each treated with calcium borogluconate (300 ml, S/C). 3 hours post calcium administration, the cervix had softened considerably. However, there was no observable dilation. The animals were then given misoprostol (Cytotec®, 1mg) intra-cervically and delivered live male calves around three hours later. Both animals had an uneventful recovery.

Keywords: Cattle, Dystocia, Incomplete Cervical Dilatation, Misoprostol

Introduction

Incomplete cervical dilation (ICD) is an important cause of maternal dystocia in farm animals. It can occur on its own or concurrent with other forms of dystocia such as torsion (Monica *et al.*, 2018; Balamurugan *et al.*, 2018; Doddagoudar *et al.*, 2020), twin pregnancy or cervicovaginal prolapse (Raja *et al.*, 2019). In cattle, the condition is most likely due to hormonal dysfunction which normally causes the cervix to ripen. The degree of incompleteness of dilation varies from complete closure, to just a small frill of cervical tissue, which is still enough to effectively block the birth canal (Noakes *et al.*, 2019).

Although the standard protocol dictates induction of parturition/ administration of calcium and waiting for several hours, this carries a risk of foetal death (Noakes *et al.*, 2019). One option to hasten the dilation of the cervix (and by extension, parturition) is the intracervical application of misoprostol (Al-Kass *et al.*, 2011). Misoprostol is a PGE₁ analogue which is often used to ripen the cervix or induce labour in women (Fiala *et al.*, 2007). In this report, we present two cases of dystocia due to ICD which were successfully treated with the intracervical application of misoprostol.

History and Clinical Signs

Two Jersey crossbred cattle, a 2-year-old heifer and a six-year-old cow, were presented to the Large Animal Obstetrics Unit, Madras Veterinary College Teaching Hospital with the history of full term pregnancy and straining for the past 12 and 18 hours, respectively. The vital parameters (temperature, pulse and heart rate) were within normal range. Per vaginal examination revealed one finger and two fingers dilation of the cervix respectively and a yellow, mucoid discharge was observed in both the animals. Both the foetuses were in anterior presentation and viable at the time of examination. Based on the history and clinical signs, both cases were diagnosed as dystocia due to ICD.

Treatment and Discussion

Immediately after confirmation of ICD, the animals were treated with dexamethasone (40 mg I/M) and synthetic PGF_{2α} (cloprostenol, 500 µg, I/M). After 24 hours, per vaginal examination revealed no change in the progress of cervical dilation. The animals were then each treated with calcium borogluconate (300 ml, S/C), which led to considerable softening of the cervix, but no further progress in dilation. The animals were then administered with misoprostol (Cytotec®, 1mg) intracervically. Both the animals delivered live male calves. One (heifer, one finger dilation) delivered around 2 hours after the misoprostol application without assistance, while the other one (cow, two finger dilation) delivered around 3 hours later with traction provided to assist the delivery. Routine follow up was followed with antimicrobials, intravenous fluids, supportive therapy and both had an uneventful recovery.



Figure 1: Both animals with their calves

Incomplete cervical dilation can occur in both heifers and multiparous cows. In the latter, subclinical hypocalcemia could be responsible for impairing uterine contractions, and by extension, cervical dilation (Noakes *et al.*, 2019).

However, the exact mechanism of the failure of cervical ripening is still poorly understood in animals (Gahlot *et al.*, 2017). In the present cases, although there was a slight change in the consistency of the cervix, the degree of dilation remained unchanged after more than three hours of subcutaneous calcium administration. Prostaglandins (particularly PGE₁ and PGE₂) are thought to play a role in cervical ripening due to their increased levels in the uterus, cervix and foetal membranes (Fuchs *et al.*, 2002). Misoprostol is an analogue of Prostaglandin E₁ (PGE₁), and is commonly used to ripen the cervix and/or initiate labour in women (Fiala *et al.*, 2007; Weeks *et al.*, 2007). In veterinary medicine, it has been successfully used to treat incomplete cervical dilation in ewes (Ibrahim *et al.*, 2012) and cows (Al-Kass *et al.*, 2011). In the cases described, complete dilation of the cervix was achieved in two (the heifer) or three (the cow) hours after misoprostol administration. The authors could not find a reasonable explanation for this difference or trace any reports comparing the action of misoprostol on heifers and multiparous animals. Further studies may be needed in this direction.

Conclusion

In conclusion, intracervical application of misoprostol is an effective alternative for treating incomplete cervical dilation in cattle. It can hasten cervical dilation, ensure timely parturition and increases the chances of the delivery of a live calf.

Conflict of Interests

There is no conflict of interest.

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