DYSTOCIA WITH MULTIPLE COMPLICATIONS IN A WHITE FULANI COW

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ABSTRACT

Multiple complications associated with dystocia are common outcomes of oxytocin abuse in managing bovine dystocia by farmers in rural settings. Most of these outcomes are either unreported or under-reported due to the eventual loss of both the dam and foetus. A 6-year-old White Fulani cow weighing 300 kg was presented at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, with difficult labour noticed about 4 days before presentation. The owner had reportedly administered 40 IU of Oxytocin intramuscularly before bringing the cow to the clinic. The animal was multiparous and kept under an intensive management system with other cows at the owner's residence. On physical examination, the cow was weak, recumbent and bloated, with a prolapsed vagina. Clinical examination revealed evidence of hypocalcaemia and dehydration. There was no foetal presentation, and the cervix was tightly closed. The foetus, weighing 28 kg, was successfully delivered by Caesarean section. Post-surgery, the cow retained the placenta and was unable to stand for more than 12 hours. Despite intensive care, the animal died about 18 hours post-surgery. This article describes an emergency Caesarean section in a White Fulani cow that had been previously and unduly exposed to oxytocin resulting in multiple complications.

Keywords: Caesarean section, Bloat, Hypocalcaemia, Retained placenta, Vaginal prolapse, Intensive management system

INTRODUCTION

Dystocia, the inability of a cow to expel a fetus, is a significant issue in cattle herds, particularly in heifers and beef cattle (Mekonnen and Moges, 2016; Abera, 2017). It can be caused by various factors, including pelvic canal abnormalities, uterine inertia, fetal oversize, and incomplete cervical dilation (Mekonnen and Moges, 2016). The economic impact of dystocia is substantial due to calf losses and impaired reproductive performance (Kebede *et al.*, 2017). The prevalence of dystocia is generally low, but increasing trends have been observed, particularly in the United States (Mee, 2008). Effective management strategies, including proper diagnosis and treatment, are crucial for minimising the incidence of dystocia and its associated complications (Abera, 2017).

Complications such as uterine inertia, vaginal and uterine prolapse as well as cervical stenosis have been associated with the misuse of oxytocin in the management of dystocia in several animals (Parikh *et al.*, 2014; Hadiya *et al.*,

2015; Biobaku *et al*., 2016). However, successful management of dystocia with oxytocin has also been documented in most domestic animals (Hadiya *et al.,* 2015; Yadav *et al.,* 2023). These suggest that while oxytocin can be effective in some cases, its misuse can lead to serious complications. The abuse of oxytocin in cows can lead to deadly complications such as cardiovascular toxicity, pulmonary oedema, myocardial degeneration and necrosis (Yeruham *et al*., 2007). This can be particularly dangerous when used in assisted parturition, as it can lead to placenta retention, uterine atony, and endometritis (Zhang *et al.,* 2020). Additionally, oxalate poisoning, which can be caused by the ingestion of certain plants, can also be fatal in cows (Rahman *et al*., 2013).

This report highlights the need for caution in the use of oxytocin in the management of bovine dystocia and emphasizes the necessity of promptly referring such cases for veterinary intervention.

MATERIALS AND METHODS

Case Description

Signalment and history: A 6-year-old White Fulani cow weighing 300 kg was presented at the Veterinary Teaching Hospital, University of Ibadan, Nigeria with a complaint of difficult labour noticed about 4 days before presentation. The owner had reportedly administered 40 IU of Oxytocin intramuscularly before presentation at the clinic when he noticed that the cow was always recumbent.

It was also reported that the animal was multiparous and was kept under an intensive management system with other cows within the owner's compound where they were constantly fed with a mixture of cassava peels, brewer's waste, groundnut cake (GNC) and palm-kernel cake (PKC). Little grass and mineral salt licks were fed to the animals (Figure 1).

Physical and clinical examination: On physical examination, the animal was weak, recumbent and severely bloated with evidence of prolapsed vagina. Clinical examination revealed evidence of hypocalcaemia and dehydration. There was no foetal presentation and the cervix was tightly closed. The cow had irregular breathing as a result of the bloat and the animal was reluctant to stand.

Figure 1: Image of recumbent gravid White Fulani cow showing vaginal prolapse at presentation

Pre-surgical Management: The bloat was relieved with the use of Trocar and Cannula left in place for some time to expel the gas and froth (Figure 2), after which an intravenous infusion of 1500 mL of Lactated Ringer solution followed by 1000 mL of 5% Dextrose Saline solution was administered to stabilise the patient.

Figure 2: Cow being relieved of bloat by the use of trocar and cannula

Anaesthetic Protocol: Local anaesthesia was employed using the inverted L block technique to de-sensitize the left flank using Lidocaine

hydrochloride (Glocain, Vital Health Care PVT Limited, India) which was supplied as 20 mg/ml of colourless aqueous solution with adrenaline in a 20-ml multidose vial. 25 ml of the 2% lidocaine was injected into the tissues bordering the dorsocaudal aspect of the last rib and ventrodorsal aspect of the lumbar transverse process on the left flank. Lack of response to pin prick at the flank region caudal to the injection sites confirmed success of the block.

Aseptic Protocol: The cow was positioned on right-lateral recumbency, while the left lateral side was prepared for aseptic surgery by clipping, scrubbing and sterilization with povidone-iodine and methylated spirit, and draped for the procedure.

Surgical Procedure: After positioning and draping, a size 10 scalpel blade was used to make an incision through the skin of the paralumbar fossa, followed by the subcutis, muscle layers and peritoneum as illustrated in Figure 3 (Brounts *et al.,* 2004; Fubini and Ducharme, 2016).

Figure 3: Caesarean section in the cow in right-lateral recumbency under local anaesthesia using 2% lignocaine

Upon opening the abdominal wall, the uterine horn was exteriorized, and a long incision was made on the less vascularized part of the greater curvature (Kumar and Purohit, 2022). A live foetus was then extracted from the uterus and placed on a resuscitating table for cleaning and resuscitation, then the uterus was thoroughly lavaged with warm sterile saline solution. The uterus was sutured with size 1 chromic catgut using a Lembert suture pattern. The peritoneum and muscle layers were sutured using a simple continuous pattern with size 1 chromic catgut, the subcutis was sutured using a subcuticular suture pattern and the skin was sutured with size 1 nylon in a horizontal mattress pattern. (Figure 4).

Figure 4: Sutured skin of cow with horizontal mattress pattern

Post-Operative Care: After the surgery, the cow was given an intramuscular administration of penicillin-streptomycin combination (10 mg/kg), 10 IU of oxytocin, 1 ml of tetanus toxoid, multivitamins (1 ml/10 kg), and calcium gluconate (1 ml/10 kg). Also, 5% Oxytetracycline spray was applied to the suture site and the animal was kept under intensive care.

Neonatal Care: The calf was placed under an infra-red lamp following resuscitation (Figures 5 – 6), ensuring it was properly cleaned and its airway was clear. A small amount of colostrum was drawn from the dam and administered to the calf within the first two hours of life. Since the colostrum quantity was insufficient, Nan 1 Optipro Starter Infant Formula was purchased from a local pharmacy and administered to the calf orally (Figure 7 – 8).

Outcome of Case: The age of the calf was estimated by using the Crown Rump Length method (Rexroad *et al.,* 1974) to be approximately 8 months. There was an incidence of retained placenta (Figure 9) following the surgery and the cow was still recumbent. The animal died at about 18 hours post-surgery despite intensive care.

Figure 5: Resuscitated calf after caesarean section

Figure 6: Calf kept under infra-red light to provide warmth

Figure 7: Calf being nurtured with colostrum from the dam

Figure 8: Calf after administration of Nan 1 Optipro Starter Infant Formula

Figure 9: Cow with retained placenta after surgery

Necropsy: The gross finding at necropsy revealed a huge gastric foreign body (Figure 10) consisting of plastic rubber materials, and ropes used locally for fetching water from household wells.

Figure 10: Gastric foreign body discovered at necropsy

RESULTS AND DISCUSSION

Dystocia with poor prognosis is a common issue in cows, with foetal causes being more prevalent than maternal causes (Patil *et al.*, 2014; Mekonnen and Moges, 2016; Shankare Gowda *et al.*, 2019). This can lead to complications such as stillbirth, maternal injury, and calf mortality (Mekonnen and Moges, 2016). The incidence of dystocia can be reduced through proper management decisions before and during gestation (Mekonnen and Moges, 2016). Caesarean sections have been effective in resolving dystocia cases, resulting in increased foetal and maternal survival rates (Patil *et al.*, 2014; Shankare Gowda *et al.*, 2019).

The misuse of oxytocin in bovine dystocia can lead to complications and poor prognosis. Biobaku *et al.* (2016) reported a case of dystocia in a Boerboel bitch due to the wrong administration of oxytocin, which was successfully treated with digital manipulation and careful delivery of the foetus. Narver (2012) highlighted the potential adverse effects of oxytocin in pregnant animals, including inconsistent and adverse effects. Prasad *et al.* (2014) identified the rare but serious complication of uterine rupture associated with oxytocin administration in animals with a closed cervix. Akar *et al.* (2012) suggested the need for further research on the effects of oxytocin in cows with dystocia, particularly in combination with enzymes and other uterotonics.

The assessment of the dam in the current report revealed hypocalcaemia, retained placenta complicated with vaginal prolapse. Despite intensive care and calcium replacement therapy, the animal did not recover. This finding is consistent with the reports of Mainau and Manteca (2011) which indicated that late presentation of animals with difficult parturition often leads to severe consequences. It is suggested that an earlier presentation could have resulted in a better prognosis, allowing the animal to recover more smoothly from surgery and post-operative stress.

The age of the calf in the present case was estimated to be about 8 months which implies that the cow was not yet at term as at the time of presentation by the client. The undue administration of an over-dose of oxytocin by the client must have precipitated premature contraction, subsequent vaginal prolapse, and eventual assisted delivery of a premature calf. Also, hypocalcaemia, which happened to be the major clinical finding in the current case must have been the primary cause of the persistent recumbency observed in the cow, which subsequently resulted in the bloat (Cooper and Gittoes, 2008; Gunn and Abuelo, 2017).

Additionally, the necropsy finding of a gastric foreign body contributed to the poor respiration and discomfort experienced by the animal up until it was presented to the clinic. Foreign body impaction has been linked to dystocia and retained placenta in several studies (Murray *et al.,* 2015; Perlman and Carusi, 2019; Das *et al.,* 2022). These conditions can lead to obstructed labour.

Researchers have consistently linked retained placenta in cows with hypocalcaemia, a condition characterized by low levels of calcium in the blood (Bouhroum and Bensahli, 2016; Rodríguez *et al.*, 2017). This association is further supported by the finding that cows with retained placenta often exhibit metabolic disturbances, including hypocalcaemia, hypophosphatemia and hypomagnesemia (Bouhroum and Bensahli, 2016). Additionally, retained placenta has been associated with bacterial infections, such as *Escherichia coli*, which can further exacerbate metabolic imbalances (Faez Firdaus *et al.,* 2014). However, the specific mechanisms underlying these associations require further investigation.

The condition of the cow was probably further complicated by poor nutrition as the presented cow alongside other animals was constantly being fed with a mixture of cassava peels, brewer's waste, groundnut cake (GNC) and palm-kernel cake (PKC). The absence of sufficient consumption of grass and mineral salt licks in the feed of cows is a clear sign of poor nutrition for ruminants, particularly during harsh and dry seasons (Morake, 2019). This is further exacerbated by the low quality of herbage available in semi-arid grasslands, which is unable to meet the nutritional needs of ruminants (Boval and Dixon, 2012). In tropical regions, the low digestibility of grasses and the lack of essential nutrients such as nitrogen, phosphorus, sodium,

sulfur, and trace elements contribute to poor nutrition for ruminants (Zain *et al.,* 2024). Despite the availability of crop residues and fibrous feeds, the productivity of ruminants remains low due to the inadequate adoption of technologies to improve their nutrition (Biratu, 2022).

Conclusion: The abuse of Oxytocin in managing dystocia cases in animals is increasingly rampant among farmers and local clients. This practice is unacceptable and highlights the urgent need for more advocacy on proper animal husbandry and welfare. Educating farmers about the importance of promptly presenting cases to veterinary practitioners and discouraging the misuse and abuse of veterinary prescription drugs is essential to eradicate this unprofessional behaviour.

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