

Management of dystocia due to faulty fetal disposition complicated with vaginal prolapse in a 2-year-old Yankasa ewe

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ABSTRACT: Dystocia in small ruminants mostly occurs when the first or second stage of parturition is delayed. It may occur when the first stage could not progress to the second stage within 30 minutes. In this report, a 2-year-old Yankasa ewe weighing 40 kg was presented at the Usmanu Danfodiyo University Veterinary Teaching Hospital Sokoto with complaints of straining and protruded mass around the vulva which was noticed 12 hours prior to presentation. Clinical examination revealed dullness, straining, a pinkish protruded mass through the vulva and pregnancy in the last trimester. Laboratory results indicated no parasite, leukocytosis, neutrophilia, eosinophilia and bandemia. Manual obstetrical maneuvers were applied to deliver the fetuses but failed. The lambs were delivered through cesarean section and the prolapsed vagina was surgically managed. The dystocia was strongly believed to have occurred in this case due to faulty fetal disposition which subsequently led to vaginal prolapse as a result of unsuccessful straining in attempt to deliver. This case report indicated that vaginal prolapse may occur as a sequela to prolonged unsuccessful straining. The conditions were managed successfully without intra and postoperative complications and relapse.

Keyword: Dystocia, straining, management, vaginal prolapse, Yankasa ewe.

INTRODUCTION

Dystocia is a clinical condition that present as difficulty in parturition that needs obstetric intervention for successful delivery to be completed (Kabir, 2017). The etiology could be of maternal or fetal origin as reported by Ismail (2016). In the present case, the dystocia was associated with faulty fetal disposition. The normal process of lambing in a ewe has been well described by Menzies and Bailey (1997), Fubini and Ducharme (2004) and Noakes et al. (2009). The first stage mostly starts when a pregnant ewe at term isolates herself from the rest of the flock, manifesting signs of restlessness, and loss of appetite,

followed by involuntary abdominal contractions that will become stronger and more frequent toward the end of this stage. Whereas, the second stage of lambing marks the protrusion of the fetus through the vulva which usually occurs within 15 to 30 minutes. The last stage of parturition follows and ends by the expulsion of the fetal membranes which usually takes place within 4 to 6 hours (Purohit, 2006; Brounts et al., 2004; Sharma et al., 2014).

It was observed by Bhattacharyya et al. (2015) that the close monitoring of the ewe during lambing is necessary for prompt intervention should the need arises. Prompt

recognition and intervention in cases of dystocia will increase the likelihood of saving the life of the ewe and the lamb. Fetal related causes of dystocia have been reported to be most commonly represented 54% in a study conducted by Bhattacharyya et al. (2015) and Pandey et al. (2018). The most frequently reported fetal related causes of dystocia were deviation of head, flexure of forelimb, breech presentation, dog-sitting posture and fetal malformations (Ali, 2011). In a study conducted by Sharma et al. (2014), it was observed that faulty fetal positioning, malformation of the fetuses and oversized fetus were the main fetal-related etiologies of dystocia in small ruminants. Maternal causes reported in literatures were incomplete cervical dilatation, uterine torsion, narrow pelvic canal, uterine inertia (Ali, 2011) and failure of cervix to dilate commonly known as ring-womb (Kumar et al., 2013). Although, Ali (2011) reported occurrence of uterine torsion, monsters fetuses, fetal emphysema and simultaneous presentation of twins as less important causes of dystocia in small ruminants.

The present case was complicated with vaginal prolapse. Prolapse of the vagina is the protrusion of the vaginal mucosa through the vulva as reported by Anderson (2019), condition commonly seen in old ewes during late gestation (Hassaneen, 2018). It occurs more frequently in large ruminants when compared with sheep and goat (Ali, 2011). Occasionally, it is seen after parturition and rarely does it occur unconnected with pregnancy or parturition (Arthur et al., 2001). However, vaginal prolapse may occur in young, non-pregnant ewes and heifers, particularly in breeds with high adipose tissue deposit (Alves et al., 2013). Feeding estrogenous plant substances and exogenous administration of estrogenic compounds are the most incriminating predisposing factors as reported by Jackson et al. (2014). Vaginal prolapse is more frequently reported in those pluriparous ewes (Ali, 2011). Apart from the twinning and excessive adipose tissue, other associated incriminating factors were lack of exercise and distended urinary bladder (Jackson et al., 2014).

Previous study conducted by Sobiraj (1990) on pregnant ewes with vaginal prolapse have shown that the serum level of their estrogen were high. These hormonal changes that occur during the last trimester of pregnancy causes relaxation of the pelvic ligaments and associated surrounding soft tissues as reported by Wolfe (2009). The result of this relaxation in combination with the rise in intra-abdominal pressure caused by the weight of the fetuses in the uterus could be considered as the most important predisposing factor for vaginal prolapse in ewe (Kahn, 2005). Other factors reported to be contributing in the pathogenesis of the vaginal prolapse could be; distention of the rumen and the hilly grazing areas which could put more weight to the relaxed pelvic soft tissue mass (Drost, 2007).

This report described a unique case of dystocia

associated with fetal mal-positioning complicated with prepartum vaginal prolapse. The vaginal prolapse might have occurred following vigorous straining to deliver the fetus. This is a very rare occurring predisposing factor of vaginal prolapse.

CASE REPORT

A 2-year-old multiparous Yankasa ewe weighing 40 kg was presented at the Large Animal Unit of Veterinary Teaching Hospital, Usmanu Danfodiyo University, Sokoto, Nigeria with complaints of straining and protruded mass through the vulva which was noticed the night prior to presentation. Further anamnesis revealed that the ewe was kept with 11 others flock member. They were kept under semi-intensive management. They were fed on wheat bran and hay. There was no previous history of medication or vaccination in the flock. Physical examination and clinical findings revealed dullness and intermittent straining. A pinkish protruded mass through the vulva area was observed. Abdominal ballottement, per vaginal examination and expression of colostrums revealed that, the ewe was pregnant in its last trimester and has difficulty in giving birth. The patient was alert and all the visible mucous membranes were normal. The rectal temperature, pulse and respiratory rates were 39.1°C, 100 beats/minute and 48 cycles/minute, respectively. Blood sample was collected through the jugular vein for complete hemogram. Fecal sample was also collected for routine parasitological examination. Obstetrical maneuvers were conducted to relieve the dystocia in order to deliver the fetuses but it was not successful. The animal was therefore referred for emergency Cesarean section.

Laboratory results

There were no parasites found in the blood and the fecal samples submitted for routine parasitological investigations. The packed cells volume (PCV) and red blood count (RBC) were within normal range. There was general leukocytosis with neutrophilia, eosinophilia along with bandemia as shown in Table 1. The vital parameters (temperature, pulse and respiratory rates) were also within normal physiological limits.

Surgical procedure

Thorough physical examination was conducted to evaluate the patient for surgery. The ewe was placed on a surgical preparation table. The right lateral flank was clipped (Figure 1) and scrubbed using Dettol® (SaroLife Care, Nigeria), methylated spirit (Jawa Pharmaceutical, Nigeria LTD) and povidone iodine (Jawa pharmaceutical, Nigeria

Table 1. Hematological results of the ewe taking prior to surgery.

Parameters	Obtained values	Absolute values	Reference values
PCV (%)	28.00	-	25.00 – 48.00
RBC ($\times 10^6$ cells/ μ l)	5.48	-	5.00 – 10.00
WBC ($\times 10^3$ cells/ μ l)	14.00*	-	4.00 – 10.00
Neutrophils	-	6.02*	0.70 - 3.20
Lymphocytes	-	4.50	2.60 – 7.20
Eosinophils	-	1.54*	0.00 – 0.10
Basophils	-	0.00	0.00 – 0.20
Monocytes	-	0.84	0.00 – 0.10
Band cells	-	1.10*	0.00 – 0.10

Asterisks signify abnormal values.



Figure 1. The Ewe at presentation with the prolapsed mass, the right left flank was clipped in preparation for Cesarean section.

LTD) as described by Yakubu et al. (2010).

Local anaesthesia was achieved through local infiltration by inverted “L” technique using 2% lignocaine hydrochloride (Binji Pharmaceutical LTD, Sokoto, Nigeria) which was given according to standard procedure described by Fubini and Ducharme (2004).

The surgical site was draped using rectangular draping pattern. Vertical dorso-ventral full thickness skin incision was made on the flank following the standard laparotomy technique described by Abubakar et al. (2014). The incision was continued on the abdominal muscles and the peritoneum to gained access to the abdominal cavity. The gravid uterus was exposed and exteriorized. Incision was made on each uterine horn at a less vascular site from the serosa down to the endometrium and the two fetuses were



Figure 2. The Patient after operation showing the surgical site with ford interlocking suture pattern on the skin.

removed alive from each uterine horn and handed over for resuscitation. The hysterotomy incision was closed from within to outward in double layer with chromic catgut using Lambert suture pattern. The abdominal muscle layers were also closed routinely using chromic catgut using simple continuous suture pattern. The laparotomy incision was closed routinely with nylon using ford interlocking suture pattern (Figure 2).

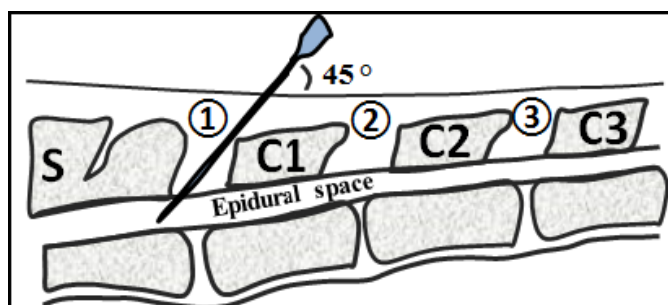


Figure 3. Schematic diagram of caudal epidural anesthesia technique with the positioning of the needle at sacro-coccygeal space. Adopted from Ali (2011).



Figure 4. Reduction of the edema of the vaginal prolapsed with sterile gauze bandage soaked in glucose D to facilitate absorption of fluid from the prolapsed mass.

Management of the vaginal prolapse

The vaginal prolapse was managed immediately after cesarean section. The ewe was restrained in a standing position for the management of the vaginal prolapse. Regional analgesia was achieved with 2% lignocaine hydrochloride (Binji Pharmaceutical LTD, Sokoto, Nigeria)



Figure 5. Application of horizontal mattress stay suture on the vulva in order to prevent the reoccurrence of the prolapse.

using sacro-coccygeal epidural anaesthesia technique as reported by Hassaneen (2018) (Figure 3). The prolapsed tissue mass was assessed for viability and presence of lacerations. The mass was found to be free of lacerations but contaminated with debris. The prolapsed mass was gently cleaned and washed free of debris with diluted Dettol®. Glucose D powder (Dana pharmaceutical Nigeria LTD) was constituted in warm water to make hypertonic solution in order to reduce the edema of the prolapsed mass as described by Scott (1989). The mass was wrapped with sterile gauze bandage soaked in the hypertonic solution (Figure 4). After reduction of the edema, the mass was gently returned manually into the pelvic cavity *in situ*. Horizontal mattress retention suture was placed around the vulva area using nylon size 1 (Ethilon™, China) to hold the mass in place as described by Hassaneen (2018) (Figure 5).

Post operatively, analgesia was achieved using 2.5% Diclofenac sodium (Furen Pharmaceutical Group, China) at 2 mg/kg IM for three consecutive days. Secondary bacterial infection was prevented using 5% Oxytetracycline (Zhejiang Pharmaceutical Co., China) injection at 5 mg/kg IM for three consecutive days.



Figure 6. The dam and the twin lambs suckling after 10 days post-operation.

Multivitamin injection (Zhejiag Pharmaceutical Co. China) at 0.2 mL/kg was administered. The ewe was monitored and evaluated daily until recovery from the surgery and the sutures were removed 10 days post surgery (Figure 6).

DISCUSSION

Obstetrical emergencies in ewes are common and require urgent intervention to prevent the mortality that could be associated with it. Majority of the obstetrical emergencies can be efficiently managed by non-elective Cesarean section. Cesarean section is the only management option when delivery of neonate through the vaginal route is not achievable. Prompt diagnosis and early surgical intervention may improve the outcome of obstetrical emergency. Causes of dystocia like incomplete cervical dilatation (ring-womb), irreducible mal-presentation, fetopelvic disparity, fetal emphysema and monsters must be managed surgically by Cesarean section (Winter, 1999; Kumar et al., 2013). In the present case, the cause of dystocia was suspected to be associated with faulty fetal disposition.

This study has fully reported a case of dystocia due to fetal mal-positioning in pregnant ewe suffered from prepartum complete vaginal prolapse. Although it was previously reported that fetal mal-position is one of the major causes of difficulty (50%) in giving birth in ewes (Thorne and Jackson, 2000; Purohit, 2006), but it is rarely complicated with prepartum vaginal prolapse as observed in the current case. Majority of the vaginal prolapse cases reported in literatures were recorded

postpartum as observed by Arthur et al. (2001). On the contrary, study conducted by Ali (2011) showed that ring-womb is one of the major causes of the dystocia in ewes and does.

The diagnosis of dystocia was made early in this case and appropriate intervention was administered promptly. Manual manipulation was tried without success before surgical intervention was attempted; this is the normal protocol in managing any form of dystocia in ruminants as reported by Thorne and Jackson (2000). Different approaches are used for the conduct of the Cesarean section, which include left flank, ventral midline and ventral paramedian approach as reported by Smith (2008) and Abubakar et al. (2014). Although there are several surgical techniques reported to conduct Cesarean section in small ruminant, the current technique adopted from Thorne and Jackson (2000) using right flank approach was successful without complications. Majority of the authors seem to prefer the left flank approach in order to minimize the manipulation of the intestine (Kumar et al., 2013; Abubakar et al., 2014). The survival rate of fetuses involved in dystocia cases is usually determined by rapid intervention between the onset of labor and the external intervention to provide care to the fetus in order to increase the chance of survival (Câmara et al., 2012).

Previous studies made an attempt to evaluate the hematological parameters as a prognostic indicator of the outcome of Cesarean section (Scott, 1989), but this failed to identify any. The stress and pain associated with dystocia could be the likely cause of neutrophilia observed in this case. Eosinophilia could also be seen in stressful condition when immune system is significantly compromised, but is mostly associated with the parasitic infestation (Ganti, 2006). Therefore, the eosinophilia observed in this case could be associated with the stress of dystocia and vaginal prolapse. Higher percentages of band cells are commonly found in leukocytosis with left shift (Ganti, 2006). When there is concurrent dystocia with vaginal prolapsed, the best way to go about the management is to handle each case separately. The most important priority is to relieve the dystocia through Cesarean section followed by the management of the vaginal prolapsed. The use of epidural anaesthetic technique is necessary in managing both vaginal and rectal prolapse. The technique will provide analgesia around the perineum thereby significantly reducing the straining.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

Conclusion

Fetal malposition is one of the most common causes of

dystocia in ewes. It can be complicated with vaginal prolapsed if left untreated for a long period of time. These conditions can be appropriately managed surgically to avoid further complications. With prompt diagnosis and emergency intervention, the life of the dam and the neonates could be saved. This management protocol can be adopted for routine clinical intervention when dystocia and vaginal prolapsed occurred concurrently.

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