

Fatal case of dystocia due to foetal postural defect in a four-year old Sahel doe

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Abstract

Dystocia is one of the many factors leading to perinatal mortality of the dam and the neonate. Prompt and accurate diagnosis of dystocia and the use of appropriate corrective measures can ensure the survival of the dam and neonate. A delay or failure to apply appropriate corrective measures could lead to the death of the dam and/or neonate. A four-year old pregnant doe (goat) at full gestation was presented to the Veterinary Teaching Hospital, University of Maiduguri, Nigeria, with a history of prolonged second stage of parturition for over 24 hours since its initiation. On clinical examination, only the right forelimb of the foetus was presented through the vulva, and there was no pedal reflex from the foetus on the presenting limb. A caesarean section was done, and a macerated foetus was recovered from the uterus. The next day, the dam died. Post-mortem examination on the dam showed degenerating caruncles in the uterus, clotted blood in the ventricles of the heart, as well as distended reticulum and gall bladder. The cause of death of the dam could have been exhaustion during the second stage of parturition, which was probably complicated by toxemia arising from foetal death and maceration.

Keywords: Dystocia; Foetal postural defect; Sahel doe; Goat.

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Introduction

Goats (*Capra hircus*) are among the predominant livestock reared in Northern Nigeria and indeed throughout sub-Saharan Africa (Abba *et al.*, 2021). Cattle, sheep and camels are the other livestock species reared in this region, which are usually seen herded together with goats and mingling freely with them at pasture, watering points and livestock markets (Mshelia *et al.*, 2013). These animals are reared mainly as a source of animal protein, repository of wealth and also for cultural purposes (Abba *et al.*, 2021). Goats are known to be prolific breeders, and cases of dystocia in goat populations have been reported to be quite common (Gupta *et al.*, 2020).

Dystocia is an important condition, as it may compromise the future reproductive life of affected animal (Yadav *et al.*, 2024). Dystocia is also a major contributing factor in the peripartum death of dam and/or neonates especially in goats (Ali, 2011; Odedara *et al.*, 2016; Ahmed *et al.*, 2019). The incidence of dystocia in goats has been reported to range between 15.0% and 39.4% (Mansigh, 2016). The causes of dystocia can be classified into maternal and foetal (Noakes *et al.*, 2019): the foetal causes of dystocia include head deviation, forelimb flexion, dog sitting position and foetal monsters. The incidence of foetal causes of dystocia has been reported to be as high as 44.4% (Anusha *et al.*, 2016). Lateral deviation of the head and flexion of the carpal and shoulder joints are the reported frequent foetal causes of dystocia in goats (Anusha *et al.*, 2016).

Successful management of dystocia depends upon accurate diagnosis, and immediate and correct intervention (Gupta *et al.*, 2020). Failure of accurate diagnosis together with an immediate management could result in death of the foetus and the dam as well. This case report presents a fatal case of dystocia in a Sahel doe due to foetal postural defect.

Case Presentation

Case History and Clinical Examination: A four-year old Sahel doe (goat) in her third parity weighing 20 kg at full term pregnancy was presented to Veterinary Teaching Hospital, University of Maiduguri, Nigeria, with the major complaint of prolonged labour of about 24 hours with a foetal limb protruding through the vulva (Figure 1). The reproductive history revealed that previous pregnancies were carried to term and a safe delivery/parturition followed after each pregnancy.



Figure 1. A doe at full gestation with a foetal forelimb protruding through the vulva, on presentation at the Veterinary Teaching Hospital, University of Maiduguri, Nigeria.

After a detailed clinical examination, there was observed a protrusion of the right forelimb of the foetus (just above the elbow joint) through the vulva and the doe was having longer abdominal contraction intervals, possibly due to a prolonged second stage of parturition. The rectal temperature (39°C) and pulse rate (77 beats per minute) were normal but there was an elevated respiratory rate (144 cycles per minute). There was also a foul-smelling discharge from the vulva. The cervix was dilated. There was absence of a pedal reflex, which confirmed the foetus was dead. Due to a narrow pelvis, a manual obstetrical manipulation was not possible.

Ultrasonography was performed and it revealed the presence of a foetus, but the foetal heartbeat could not be gotten. Considering the urgent need to relieve the dystocia, a caesarean section was indicated. Pre-surgical assessment of the animal showed that no previous surgeries had been performed, and the packed cell volume was within the reference (normal) range (Table 1) and there was no underlying disease condition. Based on these indicators the doe was deemed fit for a caesarean section and was prepared for surgery. Complete blood count was performed using blood sample (4 ml) obtained from the jugular vein of the doe with sterile needle and EDTA vacutainer tube (Narang Medical Limited, New Delhi, India).

For the complete blood count, determination of packed cell volume (PCV) was done by the microhaematocrit method (Coles, 1986), and haemoglobin concentration (HB) were determined based on the cyanmethaemoglobin method (Brown, 1986).

Red blood cell (RBC) counts and total white blood cell (TWBC) counts were done using improved Neubauer haemocytometer (Coles, 1986). Erythrocytic indices, namely, mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH) and mean corpuscular haemoglobin concentration (MCHC) were calculated using the standard formula (Harvey, 2012). Thin blood smears for differential WBC counts (lymphocytes, neutrophil, eosinophils, basophils and monocytes) were routinely prepared, stained with Wright-Giemsa stain and examined under oil immersion magnification (Sirois, 1995; Harvey, 2012).

The complete blood count showed that the PCV, HB, TWBC and absolute monocyte and eosinophil counts were within the reference values, but the RBC counts were lower than normal, the mean corpuscular values were higher than normal, and the absolute neutrophil and lymphocyte counts were lower than the reference values (Table 1).

Table 1. Haematological parameters of the 4-year old Sahel doe diagnosed with dystocia due to foetal postural defect.

Haematological parameters	Test result	Reference values
Packed cell volume (%)	32	27 – 45
Haemoglobin concentration (g/dL)	11.0	9 – 15
Red blood cell counts ($\times 10^6 / \mu\text{L}$)	6.94	9 – 15
Mean corpuscular volume (fL)	46.1	28 – 40
Mean corpuscular haemoglobin (pg)	15.9	8 – 12
Mean corpuscular haemoglobin concentration (g/dL)	39.4	31 – 34
Total white blood cell counts ($\times 10^3 / \mu\text{L}$)	4.8	4 – 12
Neutrophil counts ($\times 10^3 / \mu\text{L}$) (%)	3.52 (74%)	4 – 6 (10 – 50%)
Lymphocyte counts ($\times 10^3 / \mu\text{L}$) (%)	0.67 (14%)	1.6 – 9 (40 – 75%)
Monocyte counts ($\times 10^3 / \mu\text{L}$) (%)	0.38 (8%)	0 – 0.8 (0 – 6 %)
Eosinophil counts ($\times 10^3 / \mu\text{L}$) (%)	0.19 (4%)	0 – 1.2 (0 – 10%)
Basophil counts ($\times 10^3 / \mu\text{L}$) (%)	0 (0%)	0 – 0.4 (0 – 0.3%)

Management: For the Caesarean section, the doe was sedated with an intramuscular injection of Xylazine® (NHUI Kangning Industrial Group Co. Ltd., Anhui, China) at a dose rate of 0.2 mg/kg. The doe was then placed on right lateral recumbency, and the lower left flank was shaved, disinfected and prepared aseptically for the surgery. The incision site was desensitized with an infiltration of 2% lidocaine hydrochloride. The caesarean section was done through a left flank paralumbar laparotomy (Figure 2). On opening the uterus, a foul-smelling macerated foetus (degenerating foetal skin, partly exposed foetal viscera with some foetal bones visible) was seen (Figure 3). The foetus was in an anterior dorsosacral presentation but with a left laterally deviated head and a flexed left forelimb. The easily detachable foetal membrane was gently removed from the uterus and the uterus was closed with double layers of inverting sutures using size 2.0 chromic catgut suture material (Healthium Medtech Ltd., Bangalore, India). The peritoneum, muscles and skin were closed sequentially in routine fashion. The weight of the foetus was approximately 3 kg.

After surgery, an intramuscular injection of 2.5 mg/kg diclofenac sodium (Reyoung Pharmaceuticals Co., Ltd., Shandong, China), 400,000 IU procaine penicillin (Hebei New Century Pharmaceutical Co., Ltd., Hebei, China), and 400 mg dihydrostreptomycin (Biogain Lifesciences, Haryana, India) were administered to the dam. The doe died across the night before further planned aftercare could be given, and a post-mortem examination was performed.

Post-Mortem examination of the Doe: Post-mortem examination of the doe revealed a distended gall bladder. The heart was filled with clotted blood. The uterus was found to have foul smelling turbid dark brown coloured fluid and degenerated caruncles (Figure 4).



Figure 2. Exposure of the uterus during the caesarean section.



Figure 3. Removal of the dead foetus from the uterus of a doe during caesarean section.

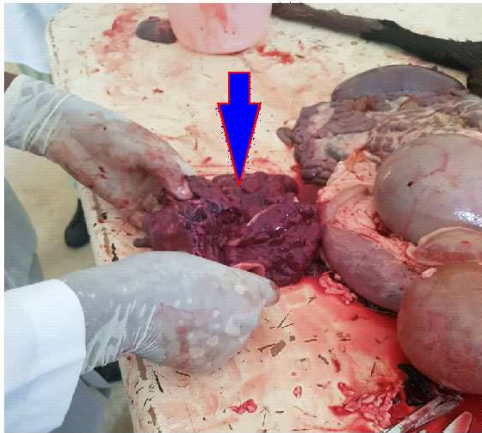


Figure 4. Degenerated caruncles (blue arrow) in the uterus of a doe, as seen at post-mortem examination.

Discussion

Caesarean section is usually necessary to relieve dystocia in goats. This is mainly due to the narrow birth canal in this species, which does not allow manual obstetrical manipulations for vaginal delivery (Ali, 2011; Ogbu *et al.*, 2011). It has been reported that when small ruminants such as goats carry single pregnancies, they are more prone to dystocia due to the large size of the foetus, and such goats are more prone to pregnancy toxemia (Noakes *et al.*, 2019). Therefore goats with single foetuses should receive special attention, and also assisted delivery should be available in case of possible dystocia (Noakes *et al.*, 2019).

The doe in this case as well as the foetus died due to mutually exclusive events. In this case, the absence of pedal reflex on the presenting right forelimb indicated that possibly the foetus was dead in utero. The foetal death may have been caused by the delay in presenting this case to the hospital. Several reports on a variety of animals have shown that delay in presenting animals with cases of dystocia to the clinic commonly result in the death of foetus (Norton *et al.*, 2007; Joythi *et al.*, 2015; Mekonnen and Moges, 2016; Lanci *et al.*, 2022). The death of the foetus in this

case may likely be directly caused by asphyxia that arose due to a prolonged lateral deviation of the head. Such postural defects seem to be common in goats (Ogbu *et al.*, 2011), and when left uncorrected lead to foetal death in-utero as seen in this case. Some authors have earlier reported delivery of dead foetuses due to postural defects (Sacchan *et al.*, 2015; Singh *et al.*, 2020). Timely presentation of the doe during the second stage of parturition could probably have saved the life of the foetus and ultimately that of the dam.

The doe probably died due to exhaustion, the stress of which may have been exacerbated by toxemia that may have set in following foetal death in utero, prior to date of parturition. The time of foetal death was not specifically determined in this case, but it was assumed that it could have been before the onset of parturition. The appearance of the macerated foetus during post-mortem is the basis for this assumption. Decomposition of the foetus and some parts of the uterine mucosa seen in this case is usually associated with maceration (Noakes *et al.*, 2019), and this may have been due to bacterial action. Rind and Shaik (2000) and Safana *et al.* (2019) identified *E. coli*, *Streptococcus Spp*, *Kliebsiella Spp*, *Staphylococcus aureus*, *Staphylococcus intermedius*, *Staphylococcus epidermis* and *Microoccus citreus* as common pathogenic bacteria in the vaginal cavity and uterus in goats. In this case, it is likely that pathogenic bacteria may have gained entry into the uterus at any time after conception and may be responsible for the foetal maceration and decomposing uterus in the dam.

The neutropaenia and lymphopaenia recorded for the doe at full blood count points to stress. The neutropenia and lymphopaenia may have impaired the ability of a doe to fight off infections.

Dystocia is generally considered an obstetrical emergency. In most cases, prompt diagnosis and appropriate corrective measures could

save the life of the dam and/or the foetus. Early presentation of veterinary obstetrical cases to veterinary personnel by animal owners is strongly recommended, as this will be of immense value in relieving cases of dystocia and saving the dam and/or foetus.

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Conflict of Interest

The authors declare no conflict of interest.

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