

# Dystocia in Local Goat in Southern Ethiopia

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## ABSTRACT

A 4-year-old doe weighing 40 kg was presented to Gesuba Town Veterinary Clinic on December 13/2023 with a history of straining, lethargy, and dullness. Additionally, the goat's owner also mentioned that it had been beaten near the pelvic bone. Clinical examination revealed forelimb protrusion began 24 hours ago and the fetus was hasn't delivered yet. The case was managed through cesarean section under complete aseptic conditions to avoid any post-operative infection. The surgical site was prepared aseptically, and the left flank approach was used with paravertebral nerve block and linear infiltration with lidocaine hydrochloride at 3.4mg/kg. then, an incision was done on over skin with an oblique sharp, the abdominal muscles, and the uterus. Finally, a live fetus with an intact umbilical cord was drawn out from the uterus of the goat. Besides, suturing was performed as per standard surgical methods and PenStrep at 1ml/25 kg I.M for 5 successive days. Furthermore, post-operative care was done including 5% dextrose 40% IV, and fluid therapy was administered and the incision site was sprayed with wound spray for 5 successive days for wound and pain management. Generally, the goat fully recovered after two weeks of follow-up. It is suggested that separate breed herd management should be a practice to avoid such life-threatening conditions.

**Keywords:** Cesarean Section; Goat; Dystocia

## Introduction

Dystocia, which translates to "difficult labor," is a Greek word. According to Waage and Wangenstein, (2013), (Ahmed [1,2]) dystocia commonly happens when stage one labor does not progress to stage two labor or when thirty minutes pass before stage two labor or parturition begins. Stage one of parturition (labor) is defined as the preparation for fetal expulsion and includes decreased appetite, preparing a birthing area, isolation from the herd, restlessness, and leading up to the early uterine contractions, which become stronger and more frequent toward the end of this stage Majeed and Taha [3]. Fetal expulsion or delivery of the neonate is stage two of parturition. The third stage of parturition follows and ends with the expulsion of the fetal membranes, which usually takes place within 4-6 hours Ismail [4]. In small ruminants, dystocia can be caused by either maternal or fetal factors. It occurs because of fetal-maternal disproportion, multiple fetuses within the pelvic canal, fetal mal-positioning, incomplete dilation of the cervix, and uterine inertia (Brounts, et al. [5-7]).

Dystocia because of fetal-maternal disproportion occurs when a heavy male breed is mated with a small female breed Hafez, et al. [8,9]. In this condition, the birth of a fetus does not occur through the birth canal because of the giant size of the fetus or newborn and the small size of the birth canal Tripathi and Mehta [9]. Fetal causes of dystocia mainly include malposition, fetal emphysema, simultaneous presentation of twins and monsters, and a higher incidence of fetal dystocia. Maternal causes of dystocia include incomplete vulva and cervical dilatation (ring womb), a narrow pelvis, uterine inertia, and uterine torsion (Kumar et al., 2015; Noakes, et al., 2009). In small ruminants, in most cases in which assistance is needed, manual correction and vaginal delivery are achieved. It is important to emphasize here the idea that extensive attempts at manual delivery of the fetus are associated with poorer outcomes for both dam and newborn survival. Ideally, in cases where there is complete dilation of the cervix, a decision should be made if the size of the fetus allows its passage through the birth canal without causing extensive damage using traction Ismail [4].

Because of the small diameter of the pelvic canal, only limited manual manipulation of the fetus to relieve dystocia is possible; thus, a cesarean section is often necessary. Furthermore, the diameter of the birth canal of small ruminants is small, making manual manipulation of the fetus very difficult. Cesarean section was reported to be an effective method for the treatment of most types of dystocia and was safe for dams as well as fetuses, especially when performed as early as possible after the onset of labor. Cesarean section is the only treatment for fetal-maternal dystocia, followed by systemic administration of antibiotics and non-steroidal anti-inflammatory drugs. Single-layer cesarean section closure must be done in two layers despite single-layer closure, as it confirms zero leakage after checking uterine leakage. Cesarean or c-section is less required in sheep and goats than in cattle because of the lesser frequency of fetal-maternal disproportion as the basis of dystocia, i.e., only 1 out of 5 compared with 1 out of 2 in cattle Al-Timimi [10]; Kachiwal 2000; Bhattacharyya, et al. [11].

Also, failure of or incomplete dilatation of the cervix is a relatively frequent cause of cesarean section. More rare indications are fetal retention, usually in cases of multiple births, irreducible uterine torsion, and fetal malformation (Waage and Wangenstein, 2013). Indications for cesarean section in small ruminants include inadequate dilatation of the cervix, irreducible malpresentation, fetopelvic disparity, fetal abnormalities, and abnormalities of the dam's genital tract Brounts, et al. [5]. When vaginal birth fails, some might consider euthanasia an alternative to cesarean section. Of interest to the sheep farmer, apart from animal welfare aspects, is the economic outcome after cesarean section, which depends on the costs of surgery and the outcomes of the ewe and her offspring. Short-term effects concerning complications survival and subsequent performance must be taken into account. Thus, to assess the effect of the cesarean section, cases should be monitored for a considerable period after surgery (Waage and Wangenstein, 2013). Fetal deaths are frequently observed when ewes undergo emergency cesarean delivery (Waage and Wangenstein, 2013). Early recognition and interference in cases of dystocia will result in a satisfactory outcome both for the dam and the neonate Ismail [4]. Generally, the outcome and success rates are much higher if surgery is performed early when the fetus is alive or freshly dead. Survival of both the dam and newborn was significantly affected by the length of time delay between the start of labor and the time of presentation for surgical intervention.

Prolonged labor before surgery impaired prognosis. So, early intervention by performing cesarean section can result in the delivery of live lambs and kids and much healthier dams (Waage and Wangenstein, 2013, Ismail [4]). Factors related to surgical skills will likely affect the prognosis of cesarean cases. The risk of postoperative complications, including infections, is likely to increase with increasing

surgery time Scott, 1989. It has been reported that the most common complication following surgery was retained placenta, which was more likely to occur in ewes that received prolonged assistance before surgery. Moreover, it was reported that vaginal tears and secondary uterine inertia (hypocalcemia) are common in non-surviving sheep and goats undergoing surgery for dystocia. The most common complications reported are acute fatal peritonitis associated with uterine tear during surgery, retained fetal membranes, and acute metritis. Vaginal or uterine tears are common in cases with delayed surgical intervention, excessive pre-operative manipulation, or mis-handling Ismail [4].

## Case History and Clinical Examination

A local goat, aged about 4 years and 40 kg bodyweight with a history of partial one foreleg out from vulva 24 hours ago was presented at a veterinary clinic in Gesuba town. The animal has been suffering from this condition for over the past three hours. The owner said that they kept different goats in the home together. the goat was injured before pregnancy in her pelvic area and the was bone fractured. On clinical examination, body temperature was 40°C with normal respiration and tachycardia and there was no injury and hemorrhage over limb. Animal dehydration status is normal, checked by skin fold test or skin turgor test, but the animal was restless. The fetus was alive as checked or confirmed by their reflexes. The presentation, posture, and position of the fetus were normal but did not come out from the pelvic canal due to oversize and problems in the birth canal. Depending on the diagnosis and clinical examinations, the case was decided to be treated as an emergency surgical manipulation by a cesarean section to deliver a kid.

## Surgical Correction and Treatment

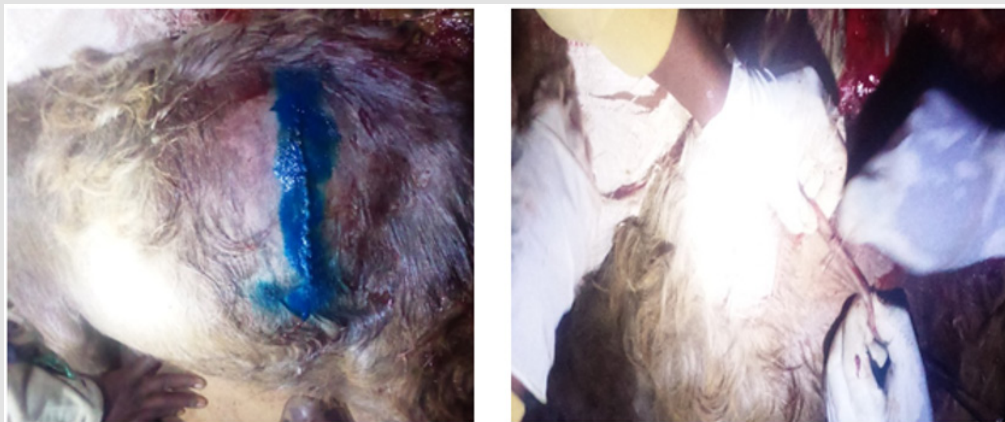
After proper restraining, the goat was placed on the right lateral recumbency exposing the left flank. the hairs on the left para-lumbar fossa were clipped by using a surgical blade and 0.05 mg/kg xylazine intramuscularly for mild sedation. next, the surgical site was scrubbed with Iodine tincture as an antiseptic and 10% lidocaine for the inverted L-block on the left para-lumbar fossa as a local anesthetic agent. About 20 cm long vertical incision was placed on the left para-lumbar fossa (skin), approximately 10-12 cm below the transverse process with the help of a surgical blade. Then, the approaches were continued using a combination of blunt and sharp dissection over subcutaneous tissues and abdominal muscle layer to approach the abdominal cavity (Figure 1). Finally, the uterine horn of the gravid uterus was grabbed and exteriorized gently to avoid perforation, and placed holding suture was on the uterine horn to hold it outside the abdominal cavity.



**Figure 1:** Surgical sites shaved and incised and lamb taken out.

The incision in the uterus was performed on the gravid horn and removed the fetus from the uterine horn by grasping the posterior limb of the fetus with the intact umbilical cord. The fetus was detached from the umbilical cord and nostrils were cleared from fluid to facilitate proper respiration. In addition, bleeding during the procedure was managed by applying sterile gauze using different straight and curved hemostatic forceps on the site. Single layer closure has been done by using Chromic Catgut with Cushing suture pattern and perforation has been checked by uterus leaking technique. surpris-

ingly due to the 1.5 mm suture gap, there was no leakage found from the uterus and the animal has been recovered quite efficiently. The uterus was washed to remove blood clots and foreign particles with normal saline. Pen stirp 1ml/25 kg was dispensed in the uterus and in the abdominal cavity to prevent secondary bacterial infection. Simple interrupted suture on the muscles layer and simple continuous suture on a subcutaneous layer with chromic catgut. A simple interrupted suture pattern was applied on the skin with silk suture material (Figure 2).



**Figure 2:** Enclosed skin by suture silk and apply wound spray.



## Postoperative Follow-Up and Results

Post-operatively, tetracycline wound spray was also applied over the wound area. Besides, the goat was kept on antibiotic Pen stirp 1ml/25 kg was given for five days intramuscularly to prevent secondary infection. Furthermore, the goat owner was also advised to

closely monitor and allow the goat in a favorable place and supply with good nutrition to facilitate wound healing. The complete healing was recorded on the 15th day post-operation without complications. Moreover, after one month of follow-up, the goat and its lamb were in good health (Figure 3).



Figure 3: Progress and outcome of the procedure after the month.

## Results and Discussion

Small ruminants are often more likely to experience dystocia than larger ruminants, and cervical obstruction or failure to dilate the cervix is a major contributing factor (Adams and Nairn, 1983; Brounts et al. [5]. Cervical ripening is a multi-factorial process that results from collagen being broken down by enzymes, inflammation, and hormone modulation. Animals may have cervical dilatation failure whenever there are changes to the abovementioned systems (Gahalot et al., 2017). The exact etiology of the condition is not known but several predisposing factors like hypocalcemia, hypophosphatemia (Al-Sultan and Majeed, 1996), and hormonal or mineral imbalances have been reported (Braun, 1997). In literature, the main indication for cesarean section in goats is incomplete dilatation of the cervix is true for present cases Brounts et al. [5]. Dystocia during first delivery and probably due to the narrow pelvis of the dam may be because of breeding the animals at a young age and/or poor state of nutritional management during gestation. Feto-pelvic disproportion has been reported as one of the main causes of dystocia in cattle (Dhaliwal, 1979) and ewes Brounts et al. [5].

Dystocia is life-threatening for both the dam and fetuses which needs immediate intervention. Proper diagnosis of causes of dystocia is very important to adopt accurate obstetrical operations. Radiography could be a tool to diagnose different causes of dystocia in small animals when other methods fail to do so Ahmed, et al. [12]. Survival

of both the dam and newborn is significantly affected by the length of time laps between the commencement of labor and the time of presentation for cesarean section (Sharma et al., 2014). Several workers reported that cesarean section becomes necessary in goats to relieve dystocia due to relatively oversized fetus and narrow pelvis of the dam when manual obstetrical operations are difficult for vaginal delivery Roberts [13], Tibary, 2004; Hussain [14]. Generally, the success rate of cesarean section is higher if performed early when the fetus is alive or freshly dead Hussain [14]. The present case report describes the survival of dams following a cesarean section of a live fetus. Post-operatively after a few hours the animal was completely active and there were no signs of internal or external bleeding.

Post-operative care and antibiotic treatment to avoid any secondary bacterial infection and facilitate the wound healing process Majeed, et.al [4,15]. Dystocia due to fetal-maternal disproportion in small ruminants is a clinical case due to different sized mix breed herding at the same place that has been successfully managed by cesarean followed by using broad-spectrum antibiotic i.e., from group Tetracycline and non-steroidal anti-inflammatory drug i.e., Flunixin Meglumine therapy and the same was depicted Ahmed et.al [1,15]. If cesarean does not occur in time, it will be fatal for the dam and fetus's life as it may result in the death of the fetus and ultimately mummification and maceration steep toward the low body condition score of animals resulting in the death of goat by systemic infection Ahmed et.al [1,4,16] (Kachiwal, 2000). This type of dystocia mainly occurs

due to the sexual matting of large and small breeds and the same has happened in this case. For the prevention of this sort of dystocia, it is necessary to keep the same type of breeds in a herd instead of mixed breeds herd at the same place [17-21].

## Conclusion

Dystocia due to fetal-maternal disproportion is common in different size mix breed herds at the same place. This can be overcome by separating flocks of the same size breed. In small ruminants, the digital manipulation of the fetus is often manageable. Prolonged and delayed attempts for vaginal delivery affect the outcome of the case severely. Therefore, cases of dystocia due to incomplete dilatation of the cervix in doe can be managed successfully by surgical intervention without any postoperative complication.

## Declarations

### Competing Interests

All authors declare no competing conflicts of interest.

### Data Availability Statement

The data used in the current study are referenced in the article.

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### Consent for Publication

Not applicable.

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