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## Surgical management of traumatic herniation of gravid uterine horn in a late-gestation doe with triple fetation

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### Abstract

A four-and-a-half-month pregnant doe was presented with a firm, non-reducible swelling in the left flank region. The animal had a recent history of trauma and mild inappetence but showed no systemic signs. Clinical examination and ultrasonography confirmed herniation of the gravid uterine horn containing three viable fetuses. Under inverted L block anesthesia, the herniated uterus was exteriorized through a flank incision, and all three fetuses were delivered alive. The uterus was sutured using Cushing's and Lembert suture patterns with chromic catgut, and herniorrhaphy was performed using vertical mattress sutures. Postoperative care included ceftiofur, flunixin, and supportive therapy. Post caesarean section, one kid was weak and died while two kids survived.

**Keywords:** Herniation, hysterocele, goat, late gestation, c-section

### Introduction

A hernia is the protrusion of visceral organs through a normal or abnormal opening in the body (Abdin-bey *et al.*, 2001) <sup>[1]</sup>. The hernial contents vary according to the anatomical location (Gyang, 1988) <sup>[4]</sup>. Hernia of gravid uterus (hysterocele) is uncommon and occasionally observed in ruminants mostly due to sudden blow or trauma to the abdominal wall (Radhakrishnan *et al.*, 1993) <sup>[6]</sup>. It is generally observed in pluriparous small ruminants in advanced pregnancy with multiple fetuses, which leads to fragility of abdominal muscles or prepubic tendon (Vijayanand *et al.*, 1993) <sup>[10]</sup>. It has been found that 71.4% of the abdominal hernia cases in small ruminants are due to trauma (Al-Sobayil *et al.*, 2007) <sup>[2]</sup>. Hernia of the gravid uterus occasionally occurs during advanced pregnancy in ruminants usually to the right side of the abdominal floor (Roberts, 1971) <sup>[7]</sup>.

Cesarean section has been described for successful repair of hysterocele in goats (Radhakrishnan *et al.*, 1993) <sup>[6]</sup>. The late pregnant uterus can become trapped in the hernia in a subcutaneous location, making vaginal delivery difficult (Smith *et al.*, 1994) <sup>[9]</sup>. These reports highlight cesarean section as a good treatment choice in such cases, especially when timely delivery and hernial correction are both required.

A case of ventral abdominal hernia with quadruple pregnancy has been reported, in which all fetuses were found dead at the time of delivery (Parvez *et al.*, 2016) <sup>[5]</sup>. In an earlier report detailed by Vijayanand *et al.* <sup>[10]</sup> a live male fetus was surgically extracted from a doe with a traumatic hysterocele under general anesthesia using xylazine and ketamine. The present report describes the successful surgical management of a late-gestation doe presenting with a herniated gravid uterine horn containing three live fetuses.

### Materials and Methods

A four-and-a-half-month pregnant, second-parity non-descript doe was presented to the Large Animal Section of Department of Veterinary Surgery and Radiology, Veterinary College Hebbal, Bengaluru, with a complaint of an abdominal swelling on the left flank [Fig. 1]. The animal had a recent history of trauma, following which the swelling gradually developed over 48-72 hours. Mild inappetence was noted, but there were no systemic abnormalities. On palpation, the swelling was firm, non-reducible, and localized to the left ventrolateral abdominal region, without signs of pain.



**Fig 1:** Goat with ventrolateral herniation

Ultrasonography confirmed the presence of a herniated gravid uterine horn containing three viable fetuses. Fetal heartbeats and movements were observed and a diagnosis of traumatic hysterocele was made. Considering the animal's stage of gestation and potential for development of dystocia, a surgical intervention was planned.

The animal was placed in right lateral recumbency and the left paralumbar region was shaved, scrubbed, and prepared aseptically using 7.5% Povidone Iodine scrub solution. Local anesthesia was achieved by an inverted L block with 2% lignocaine hydrochloride. A linear skin incision was made over the hernial region.

On blunt dissection through the subcutaneous tissue, the gravid uterine horn was exposed [Fig. 2] lying directly beneath, indicating a rupture of the lateral abdominal musculature. The herniated gravid uterine horn was exteriorized and found to be intact, with mild congestion but no signs of necrosis, torsion, or adhesions.

Hysterotomy was performed on the antimesometrial surface, and all three fetuses were extracted alive [Fig. 3]. Fetal membranes were removed, and the uterine horn was flushed with normal saline. The uterine incision was closed in two layers using chromic catgut No. 0 with a continuous inverting Cushing pattern followed by a Lembert pattern [Fig. 4]. The hernial ring was closed using Polyglactin No. 1 in a vertical mattress pattern. Subcutaneous tissues were approximated using Vicryl No. 2-0, and the skin was closed with surgical staples.

Postoperatively, the doe received Inj. Ceftriaxone-Tazobactam (10 mg/kg IM, once daily for 5 days), Inj. Flunixin Meglumine (1.1 mg/kg IM, for 3 days), and Inj. Chlorpheniramine Maleate (0.5 mg/kg IM, once daily for 5 days). Alternate day wound dressing was done [Fig. 5].



**Fig 2:** Herniated uterine horn



**Fig 3:** Live fetus retrieved from the herniated uterine horn

## Results and Discussion

The doe resumed feed intake by the next day, with no signs of discomfort or wound complications. The surgical site remained clean and intact throughout the recovery period. Of the three kids delivered, two survived and showed active suckling, while one kid became weak and died on the third postoperative day.



**Fig 4:** Uterus closed with Cushing's followed by Lembert's suture pattern



**Fig 5:** Post-operative dressing

Cesarean section has been described in successful repair of traumatic uterine herniation. There are different techniques for repairing the hernia. The first one is herniorrhaphy which is a primary repairing method and a surgical repair of simple hernia done by suturing the site of the abdomen. Hernioplasty (Repair by mesh) is another surgical repair method that is used to treat large and complex hernias by using networks or synthetic meshes.

In goats, administration of anesthetic agents like propofol and a propofol-sevoflurane combination was shown to induce significant hypotension in the caprine fetus and reduce uterine activity (Setoyama *et al.*, 2003) [8]. The survival rate of kids was found to be significantly higher when C section was performed under sedation in goats compared to when done under general anaesthesia (Elane *et al.*, 2023) [3].

General anesthesia was avoided in this case due to the advanced stage of gestation. Xylazine was not used, as its  $\alpha$ 2-

adrenergic agonist action can produce oxytocin-like effects, increase uterine tone and potentially lead to premature parturition in small ruminants. Ketamine was similarly excluded due to its potential to elevate uterine tone and reduce uterine blood flow, which may result in fetal hypoxia if not adequately balanced with sedation.

An inverted L block was performed using 2% lignocaine hydrochloride, providing effective regional anesthesia while minimizing systemic drug exposure. This technique is considered one of the safest and most practical methods for flank desensitization in standing surgeries involving the ventrolateral abdomen of goats.

A case of ventral abdominal hernia with quadruple pregnancy has been reported, in which all fetuses were found dead at the time of delivery (Parvez *et al.*, 2016) [5]. In an earlier report detailed by Vijayanand *et al* (1993) [10], a live male fetus was surgically extracted from a doe with a traumatic hysterocele under general anesthesia using xylazine and ketamine. In contrast, in the present case, a regional block was found to be a superior alternative, particularly considering the presence of multiple fetuses.

### Conclusion

The present case highlights the successful surgical management of a traumatic gravid uterine hernia in a late-gestation doe carrying triplets. Careful diagnosis, appropriate anesthesia, and careful surgery led to favorable maternal and fetal outcomes. Timely intervention is crucial in such cases to prevent complications and ensure viability of the offspring.

### Conflict of Interest

Not available

### Financial Support

Not available

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