Traumatic lateral hysterocele complicated with intestinal adhesions in a pregnant goat

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SUMMARY

Traumatic abdominal hernias are common in small ruminants. Small ruminants, including goat and sheep, are highly susceptible to acquired abdominal hernias. Injuries leading to the weakening of muscles can facilitate the contents to herniate through the abdominal wall. A three-year-old non-descript pluriparous full-term pregnant goat was presented to the Referral Veterinary Polyclinic and Teaching Veterinary Clinical Complex, ICAR-Indian Veterinary Research Institute, Izatnagar, with an exudating wound on the right lateral abdomen over a pronounced swelling. The goat was previously attacked and bitten by a group of stray dogs two months earlier, following which the swelling started to increase in size progressively. General clinical examination identified an extensive swelling on the right lateral abdomen with fluid thrill. Fetal parts and fetal movements were appreciable during palpation. The presence of a live fetus was confirmed within the hernial contents using radiographic and ultrasonic examination. A circular wound was also identified at the center of the swelling that produced a bloody discharge. The goat was subjected to an emergency cesarean section under sedation and regional anesthesia. The uterus was found herniated through the oblique abdominal muscles into the subcutaneous space. Two live fetuses were recovered from the herniated uterus. The herniated contents were replaced into the abdominal cavity after relieving the adhesion between the intestinal loop and subcutaneous tissue. The hernial ring was freshened, and herniorrhaphy was performed using synthetic polyamide suture material (overlapping mattress sutures). Post-operatively the animal was treated with antibiotics and anti-inflammatory drugs. The traumatic lateral hernia was successfully reduced in the goat after performing an emergency caesarean section and herniorrhaphy. When the life of the fetus is at stake, hysterocele should be considered as a severe condition, and an emergency caesarean section has to be performed in cases where fully developed viable fetuses are present in the gravid uterus.

KEY WORDS

Traumatic lateral hysterocele, Lateral hernia, Exudating wound, Caesarean section, Surgical management; Goat.

INTRODUCTION

A hernia is the protrusion of visceral organs through a normal or abnormal opening in the body[1]. It is broadly classified into congenital and acquired hernia. Both congenital and acquired hernias are common in domestic animals, especially in small ruminants. The most common cause of acquired hernia is trauma. A typical hernia constitutes a hernial ring or an opening in the muscle due to trauma or congenital defect and a hernial sac beneath the skin. The hernial contents vary according to the anatomical location[2]. Multiple factors like suture dehiscence, horn goring, trauma, road traffic accidents, and violent contact with blunt objects can contribute to the development of a hernia. Furthermore, increased intra-abdominal pressure, obesity, and excessive stretching of muscles during pregnancy could predispose the animal to hernias[3].

In ruminants, goats are more prone to injury and subsequent abdominal hernias than cattle due to their small size and docile nature. It has been found that 71.4% of the abdominal hernia cases in small ruminants are due to trauma[4]. The nature and type of hernial contents depend upon the site of herniation[1]. The uterus with its contents can get entrapped in the hernial sacs of abdominal, inguinal, and perineal hernias leading to dystocia[1,5]. Although most hernias can be managed by performing herniorrhaphy, extensive abdominal wall defects should be corrected by performing hernioplasty[4].

The present paper describes the clinical findings and surgical management of traumatic lateral hysterocele complicated with intestinal adhesions in a three-year-old non-descript pluriparous full-term pregnant goat.

CASE HISTORY AND CLINICAL FINDINGS

A three-year-old non-descript pluriparous full-term pregnant goat weighing 20 kg was presented to the Referral Veterinary Polyclinic and Teaching Veterinary Clinical Complex, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly with a swelling on the right lateral abdomen and an exudating wound on the swelling (Figure 1). History revealed that the goat was

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Figure 1 - **(a)** Extensive swelling on the right lateral abdomen of the three-year-old non-descript pluriparous full-term pregnant goat. **(b)** The discharge (with blood) produced from the circular wound present at the center of the swelling.

previously attacked and bitten by a group of stray dogs two months before, which resulted in progressively increasing swelling at the site of the dog bite. On general clinical examination, the goat was found dull and depressed at the time of presentation. A circular wound measuring about 3 cm (diameter) discharging bloody contents was also identified at the center of the swelling (Figure 1b).

On palpation of the swelling, fetal parts were easily identified along with the fluid thrill. Furthermore, fetal movements were also detected during the palpation. The cervix was found to be dilated during the per-vaginal examination. Based on the clinical examination, the condition was tentatively diagnosed as hysterocele. Radiological examination identified the presence of a fetal skeleton within the swelling, confirming the diagnosis (Figure 2). The ultrasonographical examination of the swelling confirmed the presence of two live fetuses with fetal heartbeats measuring 189 beats/minute (Figure 3).

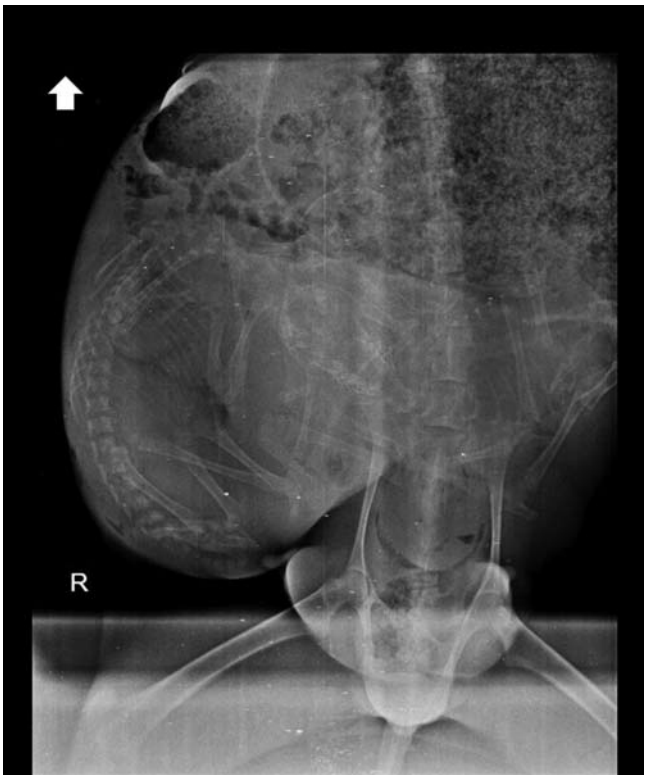

Figure 2 - Radiograph showing the presence of a fetal skeleton within the hernial swelling on the right side of the animal (arrow pointing to the cranial aspect of the animal).

TREATMENT

The goat was subjected to an emergency caesarean section under sedation and regional anesthesia. Epidural anesthesia (lumbosacral site) was induced using 2% lignocaine hydrochloride at the dose rate of 1 ml/7 kg body weight (3 ml total dose). The goat was sedated using an intramuscular injection of midazolam at the dose rate of 0.2 mg/kg body weight. Fluid therapy was initiated using normal saline at the dose rate of 10 ml/kg body weight. The right lateral abdomen was prepared for aseptic surgery. The goat was then positioned on the surgical table in the left lateral recumbency. The skin incision was made over the hernial swelling in continuation to the wound. The subcutaneous tissue was carefully dissected to enter the hernial sac. The herniated contents (gravid uterus) were carefully examined to confirm the absence of adhesions with the hernial sac and the abdominal organs. The uterus was found to be herniated through the oblique abdominal muscles into the subcutaneous space. The gravid uterus was exteriorized

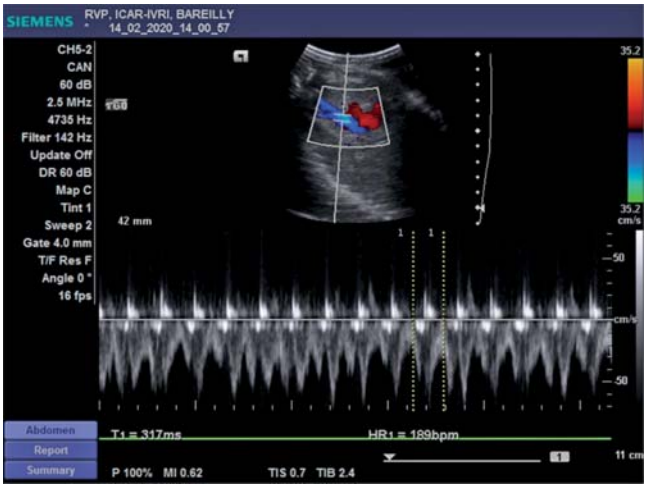

Figure 3 - Ultrasonographic examination confirmed that the fetuses were live with a fetal heartbeat of 189 bpm.

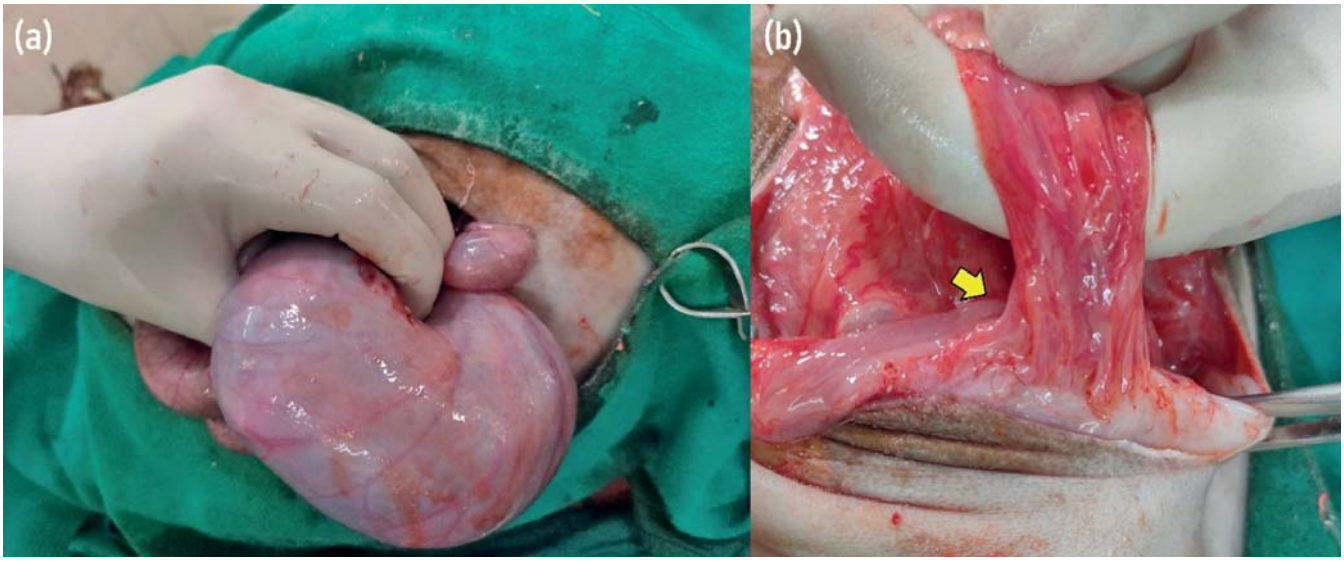

Figure 4 - **(a)** The gravid uterus was exteriorized through the incision. **(b)** Adhesion between the intestine and subcutaneous tissue (arrow).

through the skin incision (Figure 4a). Two fully developed live fetuses were recovered through the incision made in the uterus.

After the uterine incision closure, the herniated parts of the uterus were replaced into the abdominal cavity. The adhesions between the intestinal loops and the subcutaneous tissue were removed carefully (Figure 4b). The hernial ring was freshened, and herniorrhaphy was performed using synthetic polyamide suture material (overlapping mattress sutures). The subcutaneous tissue and the skin were then sutured in the routine manner using catgut (No. 2 size) and polyamide (No. 2 size) suture material, respectively. Special care was taken to limit the dead space between different layers of tissue. Post-operatively the goat was treated with antibiotic enrofloxacin at the dose rate of 5 mg/kg body weight for seven days and meloxicam at the dose rate of 0.5 mg/kg body weight for three days via the intramuscular route. A single dose of tetanus toxoid (0.5 ml) was also given through the intramuscular route as a preventive measure.

RESULTS

The animal made an uneventful recovery following the surgery. Both the kids were alive, healthy without any malformation, and survived the days following the surgery.

The goat started taking feed from the next day onwards. Although mild postoperative inflammatory swelling was observed at the surgical site, it got reduced subsequently. The skin sutures were removed on the tenth postoperative day. The traumatic lateral hernia was successfully reduced in the goat after performing an emergency cesarean section and herniorrhaphy.

DISCUSSION

Lateral hernias are considered rare in small ruminants (sheep and goats). Both lateral and ventral hernias can occur through the acquired or congenital defects in the abdominal wall other than the natural orifices[1]. Hernia ventral to stifle skin fold is termed as the ventral hernia, and the rest in the abdominal wall is known as the lateral hernia. Lateral or ventral abdominal hernias are commonly seen along the costal arch, ventral abdominal wall, high or low in the flank, and between the last few ribs[6]. The hernia can also be classified as a reducible or irreducible type. In the case of reducible hernias, the hernial contents can be pushed back into the abdominal cavity. In contrast, the contents of irreducible hernias cannot be replaced into the normal anatomical position within the abdominal cavity due to strangulation, incarceration, and adhesion between the hernial contents and the surrounding tissue[6].

The swelling associated with the hernia may vary in size and shape. Identification of the hernial ring is the most critical part in confirming the diagnosis of a hernia. The hernial mass should be differentially diagnosed from other conditions such as hematoma, cyst, abscess, and tumor. Radiographic evaluation, including both plain and contrast radiography, will help to identify and differentiate the herniated contents in the case of irreducible hernia[1,6]. The size of the hernial ring varies in diameter depending on the extent of the defect. A peritoneal lining will be absent in the hernial sac that is solely formed between the skin and the subcutaneous tissues. It could contribute to the development of adhesions between the viscera and the hernial sac resulting in complications. A hernia can be diagnosed based on the history, clinical signs, and physical examination[1]. Treatment is based on the condition of the animal and the type of hernia. Surgical management offers a rapid method for the treatment of hernia.

Abdominal hysterocele in goats due to the gravid uterus can result in a prolonged gestation period. However, the ventral abdominal hysterocele is associated with excessive enlargement of the udder due to the peculiar position of the hernia[7]. Ventral hysterocele (gravid uterus) can occur in goats due to automobile accidents and subsequent tearing of the abdominal muscles[8]. The goats that are pregnant with multiple fetuses are highly susceptible to abdominal hysterocele, especially during the advanced stages of pregnancy[7]. This can be attributed to the progressive weakening of the abdominal muscles, ultimately leading to a hernia. Ventral hernia of the gravid uterus can also occur in goats due to sudden blow or trauma to the abdomi-

nal wall[9].

In the present case, the goat was full-term pregnant with two fetuses. The trauma associated with the dog bite might have resulted in the tearing of oblique abdominal muscles that led to the herniation of the gravid uterus. Contrary to the previous reports[7,9], both the kids were alive, healthy, and survived the following days. Delay in the diagnosis and treatment of abdominal hysterocele can result in complications. The gravid horn trapped within the hernial sac can get ruptured, affecting the viability of the fetus[10]. Such unnoticed herniation of the gravid uterus can result in complications such as tissue necrosis, adhesion between the uterus, omentum, small intestine, and abdominal wall, and ruptured hysterocele[10]. Therefore, hysterocele involving gravid uterus should be immediately subjected to emergency caesarean section if the fetus is full-term and live[8,9]. Furthermore, utero-peritoneal adhesions can mimic the ventral hysterocele during the clinical examination[11,12]. Both utero-peritoneal adhesions and hysterocele can cause prolonged fetal retention in small ruminants[11-13]. However, both conditions require surgical correction by performing caesarean section[11,12].

Reproductive diseases and disorders in small ruminants, including sheep and goats, are always associated with substantial economic loss[14]. The extensive management system commonly used for the rearing of goats makes them more susceptible to trauma[12,15]. The successful management of obstetrical cases in goats mainly depends on the time of presentation and the degree of damage[16]. Goats are highly susceptible to stray dog attacks as they are mainly reared under an extensive management system. Dog bites have previously been reported to cause enterocutaneous fistula in goats that required extensive surgery (enterectomy and enteroanastomosis) for the correction[17]. In the present case, intact intestinal loops were found to have adhered to the subcutaneous tissue. The adhesion might be the result of abdominal trauma due to the dog bite.

CONCLUSIONS

Hernias, in general, are not considered an emergency condition. However, delayed treatment can lead to complications like adhesions between viscera and subcutaneous tissues due to loss of muscle elasticity. However, when the life of the fetus is at stake, hysterocele should be considered an emergency condition in all animals, irrespective of the cause. In the present case, fetuses were completely developed, and therefore an emergency caesarean section was considered the most suitable surgical intervention for managing lateral hysterocele.

Acknowledgments

The authors are thankful to the Director, ICAR-Indian Veterinary Research Institute, Izatnagar (UP) and Head, Division of Surgery, ICAR-Indian Veterinary Research Institute, Izatnagar (UP) for the facilities provided.

Funding

No substantial funding to be stated.

Disclosure statement

All authors declare that there exist no commercial or financial relationships that could, in any way, lead to a potential conflict of interest.

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