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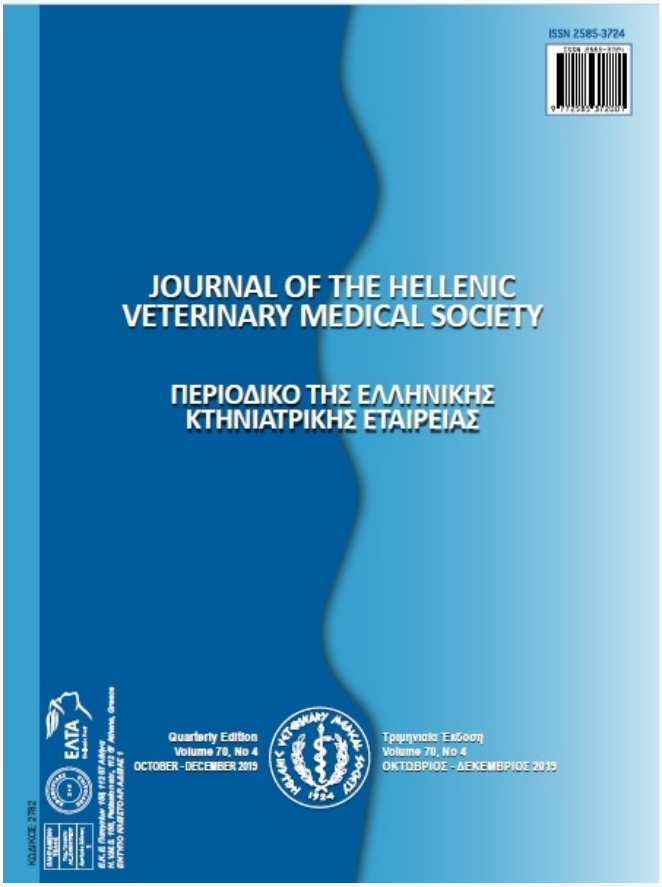

An uncommon fetal retention case: Ruptured ventral hernia in a sheep

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Case report
Κλινικό περιστατικό

An uncommon fetal retention case: Ruptured ventral hernia in a sheep

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ABSTRACT. A four-year-old pluriparous sheep was brought to our clinic with the complaints of mild anorexia and a wound on the ventral abdominal area, with part of a dead lamb protruding from this lesion. Clinical examination revealed that there was a fetal retention into the ruptured gravid uterine horn that was trapped within a ventral hernia. At herniorrhaphy after removing the dead fetus, strong connections between the uterine and abdominal wall and chronic scars/necrosed tissues were detected in the wound edges, which revealed the long time lapse between the unnoticed herniation-tearing and surgery. Although many ventral hernia cases have been reported in ovine pregnancies, the high maternal resilience in this ruptured hysterocele case, which had a two-week-old history at minimum, is clinically remarkable.

Keywords: Ventral hysterocele, uterine rupture, fetal retention, sheep

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INTRODUCTION

Herniation is a well-described pathology in pregnant animals. Ventral deviation and trapping of the pregnant horn are commonly seen in sheep, especially in older animals during late pregnancy (Jackson, 2004; Tiwari et al., 2004; Parvez et al., 2016). Spontaneous or traumatic injuries can result in hernia and falling of the uterus into the herniated portion (Purohit, 2006). Pregnancy is seen to be a contributory factor, because the abdominal wall weakens during this period (Noakes et al., 2009; Jettennavar et al., 2010).

Ventral uterine hernia is grossly visible by swelling/enlargement at the lateral abdomen (Purohit, 2006), especially on the right side (Al-Sobayil and Ahmed, 2010). The swelling is very prominent; it can be located anywhere from the lateral side of the thoracic cavity to the iliac crest, above the stifle (Abdin-Bey and Ramadan, 2001; Mahdi, 2015). Systemic symptoms are usually absent and incarceration risk is considered as low in ventral hernia cases (Venugopalan, 2000). Jettenavar et al. (2010) reported that ventral hernias are generally ignored by the rural farmer community unless they result in some serious symptoms. However, females with a hernia during late pregnancy are at high risk of dystocia due to blocked myometrial contractility and utero-peritoneal adhesions (Smith and Sherman, 1994; Sobiraj, 1994; Erdogan et al., 2015).

In this case report, the clinical findings of a ruptured ventral hysterocele in a sheep were described that, incidentally, had occurred at least two weeks previously.

CASE REPORT

A four-year-old pluriparous ewe, weighing approximately 50-55 kg, was brought to the Aydın Adnan Menderes University, Faculty of Veterinary Medicine, Department of Obstetrics and Gynecology clinic. According to farm records, the new flock was bought approximately two weeks earlier and the current problem of this sheep had not been noticed. They had considered that her only problem was a slight loss of appetite for a few days. However, careful observation revealed a ruptured area with a fetid odor.

During clinical examination, the sheep was conscious, walking painlessly, but had mild dehydration. The inspection of the ventral abdomen showed an 8 cm diameter perforation located at the cranial area of the left half-udder. It was seen that the wound edges had fibrous thickness and necrotic scars. The protruded necrotic tail of the dead fetus carried a fetid odor (Fig. 1). After traction of the necrotic tail part, a twisted joint of the fetal limbs was detected in the entrance of the sac (Fig. 2).

Figure 1. Aspherical opening with fetid odor at the abdominal region. Part of fetal tail protruding from the wound (white arrows)

Figure 2. Appearance of the ventral abdomen following the tracking of fetal tail and preoperative preparation of the ruptured hernia

As no hematological, biochemical or radiographic analysis could be performed due to the owner's financial position, the removal of the dead fetus and surgical repair of the hernia sac were performed. Using a sedative (0.05 mg/kg xylazine HCl, Rompun® 2%, Bayer) and local anesthetic (200 mg lidocaine HCl, Adokain®, Sanovel), the ruptured area was widened with excisions and the dead fetus was successfully removed, being intact. It was male, weighing 2.5 kg, and without any abnormalities (Fig. 3).

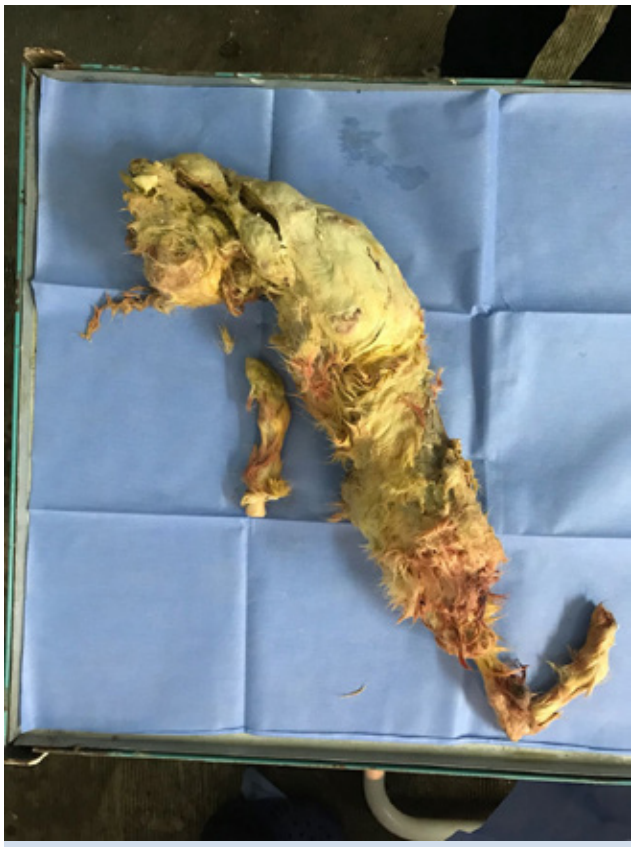

Figure 3. Macroscopic appearance of dead fetus

During surgery, the strong adhesions including skin and muscle tissues between the ruptured wall of the gravid horn and ventral abdominal wall were separated bluntly. However, other strong fibrous connections from the gravid horn to the omentum and small intestines were not separated in order to avoid hemorrhage and perforation risk. After intrauterine irrigation with warm saline solution and antibacterial applications (crystallized penicillin G potassium, 2,000,000 IU) to the uterine and abdominal cavities, the uterus was closed and the hernia repaired according to the appropriate repair procedures (Hoise, 2007). All adhesions located along the ruptured area were removed bluntly, and tranexamic acid (10 mg/kg, Transamine®, Fako) was injected to avoid local hemorrhages. Balanced electrolyte solutions (40 ml/kg) and dextrose 5% (20 ml/kg) were provided to the patient animal intravenously. The sheep recovered after a week with the administration of tetracycline HCl (20 mg/kg, Tetraoxyphen L.A.® 20%, Atafen) and flunixin meglumine (1.1 mg/kg, Fulimed®, Alke) injections, post-operatively.

DISCUSSION

Obstetric emergencies in small ruminants have a negative impact on fetal survival rate and maternal fertility. Among these emergencies, the intrusion of the gravid uterus in the hernial sac is commonly encountered in sheep (Jackson, 2004). Researchers have reported that the most common type of hernia is the ventral abdominal, and its prevalence is reported as between 58.34 and 68.2% of all types of hernias (Al-Sobayil and Ahmed, 2007; Hassen et al., 2017; Mahdi, 2015). The evisceration of the fetus accompanying a ventral abdominal hernia is a very rare condition, especially on the left side, in contrast to Al-Sobayil's and Ahmed's (2010) findings. Only one similar case report complicated by fetal lamb evisceration was found in the accessed veterinary literature, but it could not be treated surgically due to a large hernia sac and lesions on the skin. Perez et al. (2002) emphasized the possible deleterious impacts of laparoscopic insemination procedures on the abdominal wall.

Extreme abdominal distention, weakness of the abdominal muscles, and different types of mechanical traumas (kick, horn thrust, and blunt objects) are important contributory factors for hernia formation (Smith and Sherman, 1994; Krishnamurty, 1995; Arthur, 1989; Al-Sobayil and Ahmed, 2007; Hassen et al., 2017). These researchers have pointed to blunt trauma causing muscle and visceral disruptions / contusions without making any external wound. However, the perforation of the hernia sac might be resulted by a second external trauma or fetal movements at parturition complicated with cervical spasm and or stenosis in our case. It is estimated that this situation is more than two-week-old according to owner's explanation and appearance of the edges of the rupture wound and internal adhesions.

Although evaluating of fetal and maternal health condition have not been based on the reliable data of preoperative hematological analysis and patient's history, it can be hypothesized that there are two plausible explanations to evaluate the maternal preoperative "good" condition and successful treatment.

Firstly, according to the weight (about 2.5 kg) and intact appearance of fetus without any abnormality (Fig 3), it can be considered that uterine inertia resulted in the dystocia then, fetal retention. The main cause and time of fetal death are not detected based on clinical findings. It might be after trauma immediately causing evisceration or hypoxia at prolonged second phase of parturition. Maternal resistance may hide the real condition and cause the quiescent days clinically.

In our previously case report, an intact co-twin fetus without causing any systemic disorder was removed from a ventral hernia after 30 days of sibling's birth (Erdoğan et al., 2015). Even though limited reports, the fact that some unknown factors affecting on the maternal response following fetal loss should be considered.

The second plausible explanation is that these strong connective tissues observed in the hernia sac and wound edges might act as a strong barrier to block the peritoneal contamination cause by fetal fluids, especially after the fetal death. It was well-known that the adhesions resulting from hernia, and they are among serosal surfaces due to an imbalance between fibrin deposition and fibrinolysis (Van der Wal and Jeekel, 2007). These adhesions prevent the mobility of uterus within the abdominal cavity resulting in decreased dilatation of cervix and expulsive force at term (Jackson 2004; Purohit, 2006; Erdoğan et al., 2015, Khan et al., 2018). However, this adhesive tissues might be not only the cause of fetal retention, but also had protective effect for maternal toxicities in this case. Additionally, the direction of rupture would make easy drainage of all fetal fluids and inflammatory discharges. The easily drainage of infective fetal fluids and not being contaminant to peritoneum / other abdominal organs and tissues may be an important protective factor for this case. Interestingly, opening the outside of hernia sac helped the fluid drainage and then, the dead fetus obstructed in wound might block the external contamination.

Trauma due to horning from other animals appeared to be the most common cause of abdominal hernias (Al-Sobayil and Ahmed, 2007). Unpredictable hazardous behaviors such as sudden movements, horning, kicking, and other metal stuffs wire fencing can trigger a lethal emergencies in pregnant animals.

In summary, this manuscript presents a clinical case of 4-year-old sheep with ventral hernia. Gravid uterus with dead fetus is rare case in ovine reproductive medicine. ruptured ventral hysterocele complicated with fetal death repaired surgically in this ewe is extremely rare case. Following the pregnancy diagnosis and fetal counting, dividing the pregnant ewes into different groups is essential for a good management system. Some essential approaches in the herd management system (separation pregnant females, grouping them according to fetal counts, eliminating traumatic issues in flock, close observations of animals etc.) would make timely diagnosis and treatment possible to decrease maternal and fetal mortality.

CONFLICT OF INTEREST

None declared.

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