Prolonged co-twin foetal retention in a sheep: caused by hysterocele?

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SUMMARY
Prolonged foetal retention is a birth complication and its clinical signs usually appear in early puerperium with systemic illness. This case report describes a case of co-twin foetal retention and its pre/intraoperative clinical findings. A sheep was referred to our clinic suffering from a ventral mass and loss of appetite in the previous three days. She had given birth to one healthy lamb 33 days before. After haematological tests, neutropenia and anaemia were detected. Ultrasonic and radiologic examinations revealed a dead foetus in this mass. Following clinical examination the preliminary diagnosis was a prolonged foetal retention related to a ventral hysterocele. During surgery no findings related to ventral hysterocele was observed but utero-peritoneal adhesions were detected. A dead but otherwise intact foetus was removed from the uterus. Following surgery the sheep recovered uneventfully. This is a rare case of prolonged co-twin ovine foetal retention in an adhere uterus, and for as long as 30 days asymptomatic.

KEY WORDS
Adhered uterus, pregnancy abnormality, sheep.

INTRODUCTION
Dystocia in multiple pregnant small ruminants increases the risk of perinatal lamb mortality and it is related to important economic losses[10]. It is more frequent in twin ovine pregnancies than singletons, except when singletons are oversized[8]. Moreover, some maternal dysfunctions (uterine inertia, uterine rupture and ectopic pregnancies) are reported as delivery problems in does[11]. Foetal retention resulting from dystocia is a rare complication, and usually suspected in early puerperium with systemic illness such as high temperature, anorexia, lethargy etc.[4]. It has been recorded in cases of multiple lamb births and uterine torsion[2,17]. Foetal retention caused by prolonged ovine dystocia causes necrotic metritis and is usually fatal[5,13]. This short communication describes a rare case of delayed interval delivery of co-twin foetuses with pre/intraoperative clinical findings in a sheep. The dead but also intact foetus which was not delivered due to utero-peritoneal adhesion had caused no maternal systemic clinical signs after 30 days from the co-twin’s birth.

CASE DESCRIPTION
A 2-year-old, Chios-Kivircik crossbred sheep was presented to the Clinics of Adnan Menderes University, Faculty of Veterinary Medicine, with a large mass palpated in the ventral abdomen and a 72-hour history of inappetence. The sheep had given birth to one healthy lamb at term -33 earlier days.

Parturition was performed without assistance and no genital disorders (retention secundinarum and/or metritis were observed in the postpartum period. Primary examination revealed that the sheep was in good condition and normothermic. The only abnormal external clinical finding was a painless and compressible mass localized on the left ventroabdominal region (Figure 1). No vaginal discharge was observed. Vaginal examination revealed that the cervical canal was closed. In contrast to her good physical condition, haematological tests showed that White Blood Cell (WBC), Red Blood Cell (RBC) and haematocrit (HCT) values were lower and 5.62 x 10⁹; 4.04 x 10¹² and 14.28%, respectively.

At abdominal palpation, fluctuation was noted on the region where the mass was located. A foetus localized in this mass was identified by trans-abdominal ultrasonography. During the foetal ultrasonography, an increase in echogenity was detected in the foetal fluids (Figure 2A). Moreover, a radiograph was taken in lateral projection to examine the localization of the dead foetus (Figure 2B). Following all patient’s data obtained from clinical and laboratory examinations, the preliminary diagnosis was a prolonged foetal retention due to ventral hysterocele (gravid).

The treatment of choice was the surgical removal of the dead foetus from the uterus and to repair of ventral hernia surgically. The sheep was sedated with an intramuscular injection of 0.2 mg/kg Xylazine hydrochloride (Xylazinbio 2%® - Biovetra, Turkey) and placed in right recumbency and the ventral abdomen was aseptically prepared in a standard fashion. The surgical area was desensitized with a linear infiltration of 2% lidocaine hydrochloride (Adokain® - Sanovel, Turkey). During the linear /over the swelling surgical incision of the abdominal wall, no hernial sac formation could be observed. After
opening of the abdominal cavity, it was clearly seen that the lateral surface of the left gravid horn was tightly adhered to the abdominal viscera. The gravid horn was localized in front of anulus inguinalis. The abdominal wall was intact. The left horn was detached carefully from the abdominal wall. The adhered gravid horn - viable appeared - and the only abnormal physical finding was a localized circumscribed purulent area on the external surface of the uterus (white arrows, Figure 3). When lancing the uterine wall the foul-smelling, purulent foetal fluid was aspirated to avoid intra-abdominal contamination. A dead but intact foetus at full term was removed. On partial post-mortem exam of dead foetus, neither congenital nor acquired abnormalities were recorded (Figure 4).

Following closing the uterus with Lembert and Schmieden sutures, to prevent the development of abdominal adhesions 50 to 100 ml of a solution of 6% dextran 70 was dripped into the peritoneal cavity and the abdominal wall was closed with a continuous suture by using 2-0 polyglactin 910 (Vicryl®, Ethicon). Postoperatively, antibacterial therapy was given with 2.5 mg/kg enrofloxacine (Baytril-K® 5%, Bayer IE Ulagay) daily for five days. A week after surgery, the sheep was clinically normal and appeared healthy. No complications were recorded throughout the four weeks following the surgery.

**DISCUSSION**

The delivery of a dead foetus depends on the extent of foetomaternal signalling mechanisms operative between the uterus, ovaries and pituitary gland. A foetus when it dies in the uterus is usually expelled within 24-72 hours after its death\(^1\). Although long-term retention of a dead foetus cases have also been reported in elephants\(^7,14\), the causes and pathogenesis of prolonged foetal retention in the elephant are unknown.

It is well known that in domestic animals species an healthy foetus can develop beside a mummified co-twin. The dead bovine foetus can remain in the uterus for between 150 or 200 days or a normal gestation period\(^6\). A live calf with a mummified co-twin foetus was recorded in a heifer\(^1\). Mummified foetus/es present in the uterus with normal healthy foetuses are reported in small ruminants\(^3,9\). Moreover Tutt, (1997) reported that a mummified co-twin foetus was described in a doe after two months from the normal birth of a healthy kid. In this case report non mummified, intact foetus covered with purulent foetal fluid was observed. Brozos et al., (2012) reported - an emphysematous embryo removed from infected and necrotised uterus in a Chios ewe.

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**Figure 1** - Macroscopic appearance of ventro-abdominal mass.

**Figure 2** - A) Ultrasonographic image at the mass, increased echogenicity of foetal fluid (a), foetal body (b). B) Lateral radiograph of the sheep showing the dead foetus in the ventro-abdominal mass.

**Figure 3** - Green colour - localized circumscribed purulent area (arrows) on the adhered uterus horn surface.

**Figure 4** - The dead intact foetus delivered via caesarean operation 33 days after the co-twin birth.
which had given birth to 2 lambs, 2 days earlier. Similarly, the case of a foetal retention about 5-month-old resulting in Trichogranulomatous panmetritis was observed in a bitch4. Despite the presence of foul-smell and purulent foetal fluids in the gravid horn, no findings related to necrotising of the uterine wall was seen except the small purulent area localized in its dorsal surface. The left adhered gravid horn was viable and sutured successfully after uterine lavage. Regarding to the intact foetus, non-necrotized uterine wall, and low haematological values, it can be assumed that foetal death has occurred in the 2-3 days. This is the most plausible explanation for the first quiescent postparturient 30 days, without any foetal degeneration and maternal systemic illness. To the authors’ knowledge, this is a rather unique case of prolonged retention of a co-twin caused by utero-abdominal adhesion in a sheep. Intraperitoneal adhesions are fibrous bands of connective tissue with blood vessels and neurons in some cases. Adhesions usually are formed after surgical trauma, inflammation, ischemia and/or infection of the peritoneum, leading to abnormal connections among serosa surfaces due to imbalance between fibrin deposition and fibrinolysis16. Although it was not possible to establish the cause of the utero-peritoneal adhesion in this case, it is likely that the retained foetus was not normally delivered because of reduced and/or absent myometrial contractions. The foetal counting and monitoring of single and multiple pregnancies by using ultrasonography is important for maternal health and also foetal outcome. Having divided the pregnant ewes into single- and multiple foetuses groups, at parturition of the multiple foetuses carrying-sheep it should be established by manual trans-vaginal examination that all foetuses have been delivered. The early diagnosis of the foetal-maternal problems may help to reduce the lamb mortality and economic losses in the flock.

References