

# A Bilateral Congenital Scrotal Hernia in an Akkaraman Breed Lamb: A Diagnostic Approach and Surgical Management

## Akkaraman Irkı Bir Kuzuda Bilateral Konjenital Skotal Herni: Tanısal Değerlendirme ve Cerrahi Yönetim

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### ABSTRACT

This case report aimed to evaluate the clinical course of an Akkaraman lamb with a bilateral congenital scrotal hernia, especially in terms of diagnostic approach and surgical treatment process. Clinical, radiological, and ultrasonographic examinations made diagnosis and hematological parameters were additionally examined. In this particular case, trans-scrotal ultrasonography demonstrated a reduction in blood flow to the herniated intestinal segments. Hematological analyses revealed hyperlactatemia, leukopenia, and decreased MCHC levels. During the operation, it was determined that the herniated organ was the small intestine; it was observed that both testicles were atrophic, and the left inguinal ring expanded in the craniolateral direction, forming an opening of approximately 15 cm. Bilateral orchiectomy, herniorrhaphy, and scrotal ablation procedures were performed operatively. The lamb was discharged in good health on the 10th postoperative day. As a result of the literature review, it was seen that this was the first case of bilateral congenital scrotal hernia reported in a lamb and the Akkaraman sheep breed. Furthermore, hematological tests are believed to possess diagnostic and prognostic value in such cases.

**Keywords:** Akkaraman, Herniorrhaphy, Lamb, Orchiectomy, Scrotal hernia

### Öz

Bu olgu sunumunda, bilateral konjenital skrotal herni'ye sahip bir Akkaraman kuzusunun klinik seyrini, özellikle tanısal yaklaşım ve cerrahi tedavi süreci açısından, değerlendirmek amaçlanmıştır. Tanı; klinik, radyolojik ve ultrasonografik muayeneler yoluyla konulmuş ve ek olarak hematolojik parametreler incelenmiştir. Bu vakaya özgü olarak transskrotal ultrasonografide, fıtıklaşmış bağırsak segmentlerinin kan akımında azalma saptanmıştır. Hematolojik analizlerde ise hiperlaktatemi, lökopeni ve MCHC düzeyinde düşüş tespit edilmiştir. Operasyon sırasında fıtıklaşan organın ince bağırsaklar olduğu belirlenmiş; her iki testisin atrofik geliştiği ve sol inguinal kanal girişinin kraniolateral yönde genişleyerek yaklaşık 15 cm'lik bir açıklık oluşturduğu gözlenmiştir. Operatif olarak bilateral orşiektomi, herniorafi ve skrotal ablasyon işlemleri uygulanmıştır. Kuzu, postoperatif 10. günde sağlıklı bir şekilde taburcu edilmiştir. Yapılan literatür taramaları neticesinde, bu olgunun bir kuzuda ve Akkaraman koyun ırkında bildirilen ilk bilateral konjenital skrotal herni vakası olduğu görülmüştür. Ayrıca, hematolojik testlerin bu tür vakalarda tanısal ve prognostik önem taşıdığı düşünülmektedir.

**Anahtar Kelimeler:** Akkaraman, Herniorafi, Kuzu, Orşiektomi, Skrotal herni

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## INTRODUCTION

A scrotal hernia is when abdominal organs, typically the small intestines and omentum, herniate into the scrotum through the enlarged inguinal ring.<sup>1</sup> In the field of veterinary literature, there have been reports of scrotal hernia in rams and lambs of various breeds, including Oudah, Balami, German Merino, Dumba, and several local breeds.<sup>2-6</sup> A diagnosis can typically be made relatively easily through a clinical examination. Furthermore, radiography and ultrasonography are valuable diagnostic tools employed in differential diagnosis.<sup>3,7</sup> Treatment is surgical, and herniorrhaphy is the most common procedure used for this purpose. This procedure can be combined with orchiectomy, depending on the case and wishes of the patient owner.<sup>1</sup>

This report presents the first case of a bilateral congenital scrotal hernia in a lamb. Additionally, it is the first case of this condition ever described in an Akkaraman breed.

## CASE PRESENTATION

A 12-day-old Akkaraman lamb was presented to the Selcuk University Faculty of Veterinary Medicine Surgery Clinic with a complaint of congenitally abnormal size of the scrotum. At first glance, the lamb's general condition appeared normal, but its scrotum, which sagged to the level of the tarsal joints (Figure 1), and considerably expanded in volume, was striking. No pathological findings were identified during the general examination other than mild pain (teeth grinding). He had a sucking reflex, and his reaction to the environment was normal. During the examination, both hernia passages were palpable, and it was surmised that the herniated structures might be intestines due to their consistency. Additionally, it was felt that the left hernia passage was more expansive than the right one.



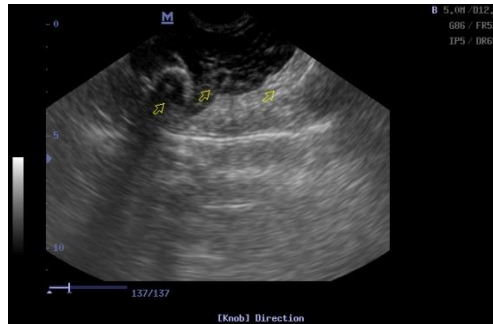
**Figure 1.** Appearance of enlarged scrotum extending to the level of the tarsal joint.

The radiographs revealed the presence of intestinal segments containing gas (Figure 2).

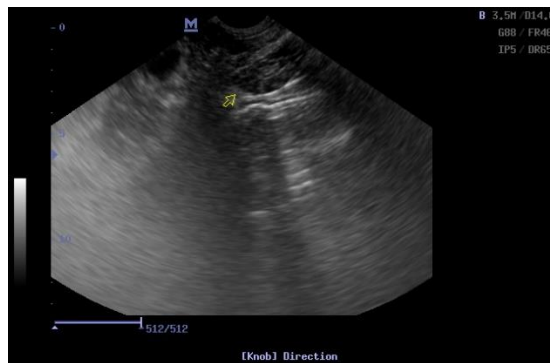


**Figure 2.** Radiographic view of gas-filled bowel segments herniated into the scrotum.

In the trans-scrotal ultrasonographic examination, the hernia holes, herniated bowel segments (Figure 3), and atrophic testicles (Figure 4) were identified. It was also observed that the blood flow in the herniated intestinal segments was relatively reduced. It is known that there is a risk of ischemia or hypoperfusion in cases of scrotal hernia.<sup>8</sup>



**Figure 3.** Ultrasonographic view of the hernia hole, herniated bowel segments and scrotum skin, respectively (yellow arrows from left to right).



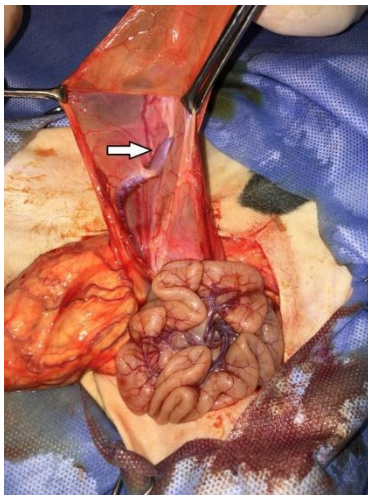
**Figure 4.** Ultrasonographic view of atrophic testicle (yellow arrow).

In the presented case, to determine these complications and the hematological changes that may occur due to them a venous blood sample (5-6 mL) was obtained via jugular vein puncture under aseptic conditions. Complete Blood Count (CBC), venous blood gas and electrolyte levels were

measured within the scope of laboratory analysis. As a result of CBC, it was determined that total WBC ( $2.59 \text{ m/mm}^3$ ), and MCHC ( $28.1 \text{ g/dL}$ ) levels were lower, and PLT ( $947 \text{ m/mm}^3$ ) levels were higher than the reference values. Blood gas and electrolyte analysis revealed a low pH (7.276), high  $\text{paCO}_2$  (49.7 mmHg), low  $\text{paO}_2$  (26.8 mmHg), and hyperlactatemia ( $3.3 \text{ mmol/L}$ ), indicating mild respiratory acidosis.

After a clinical examination, the patient was administered sedation via an intravenous injection of Diazepam (Diazem, 10 mg/2 mL, DEVA Holding Inc., Istanbul, Türkiye) at a dose of 0.2 mg/kg. The induction was performed with the administration of Ketamine (Ketasol 10%, 100 mg/mL, Interhas, Ankara, Türkiye) via intravenous injection at a dose of 2 mg/kg, and the patient was intubated using a size 4 polyvinyl chloride endotracheal tube and connected to the anesthesia device. The surgical procedure was performed under inhalation anesthesia using Isoflurane (100 mL Liquid, Forane®, Aesica Queenborough Ltd., UK). The initial concentration was set at 3%, subsequently reduced to 1.5%. In addition, 10 mL of lidocaine (Adokain, 50 mL, Sanovel, Istanbul, Türkiye) was administered via local infiltration anesthesia at the base of the scrotum.

The surgical site was prepared in accordance with the standard operating procedures. Following the incision of the skin and tunica dartos, the tunica vaginalis was accessed through blunt dissection. By incising the tunica vaginalis, the herniated intestines and atrophic testicles were exposed (Figure 5).



**Figure 5.** Intraoperative appearance of bowel segments and atrophic testicle (white arrow).

During the examination, the intestines were observed to have a normal structure. In contrast to the right side, the left hernial orifice expanded, forming an opening measuring approximately 15 cm in the cranio-lateral direction. Once all the requisite checks had been completed, the herniated intestines were returned to the abdominal cavity, and the atrophic testicles were excised following ligation of the spermatic cords (orchietomy). Following the excision of the tunica vaginalis from the distal end, the inguinal rings were closed with an interrupted pattern suture (herniorrhaphy) using polyglycolic acid no 0 (Alcasorb, Katsan, Izmir, Türkiye). The excess scrotum was excised (scrotal ablation), and the subcutaneous tissues were sutured in a continuous pattern using polyglycolic acid no 2-0 (Alcasorb, Katsan, Izmir, Türkiye). The skin was then closed with simple interrupted sutures using silk no 0 (Alcasilk, Katsan, Izmir, Türkiye). To prevent potential infection, a 0.75 mL intramuscular benzylpenicillin+dihydrostreptomycin (Reptopen, 50 mL, Ceva, Istanbul, Türkiye) injection was administered once daily for five days. The patient did not develop any complications and was discharged on the 10th postoperative day.

## DISCUSSION

A review of the available literature revealed that three distinctive features of this case were identified, differentiating it from previous reports in the field.<sup>2-7, 9-11</sup> Firstly, this is the first case of scrotal hernia observed in the Akkaraman sheep breed. Secondly, the herniation was bilateral. In available case reports it has been reported that scrotal hernia cases occur unilaterally.<sup>2-6, 7-11</sup> The third feature is that it has been demonstrated that scrotal hernia is a congenital condition. In the literature searches, three case reports that were considered congenital were encountered.<sup>6,9,10</sup> Dennis and Leipold<sup>9</sup> reported that two of the 21 lambs with a congenital hernia that they detected during necropsy exhibited scrotal hernia. Details of this study could not be obtained. Parizi<sup>6</sup> reported a case of scrotal hernia in a 5-day-old local breed lamb that was noticed on the 2nd day after birth but did not express an opinion about its etiology. Smith et al.<sup>10</sup> reported the detection of congenital scrotal hernia in three hoggets during research conducted at the slaughterhouse. Nevertheless, given their age, we consider the probability of these cases being congenital hernias to be low.

In the presented case, a notable observation made during the ultrasonographic examination was a reduced perfusion of the herniated bowel segments. At this point,

hematological tests were used. In literature research related to the subject, it has been observed that an increase in lactate levels may be related to hypoperfusion and ischemic hypoxia.<sup>12,13</sup> Furthermore, the number of leukocytes may change in response to microvascular damage in cases of ischemia and reperfusion.<sup>14</sup> Finally, the decrease in MCHC level may be related to the hypooxygenation of organs.<sup>15</sup> In this context, it is suggested that the test results of the presented case (hyperlactatemia, leukopenia, and the decrease in MCHC level) are related to hypoperfusion, reperfusion, and hypooxygenation of peripheral tissues. It is thought that these conditions may be caused by scrotal hernia.

This report evaluated the clinical course of a bilateral congenital scrotal hernia case encountered for the first time in an Akkaraman lamb. The patient was successfully treated with surgical intervention, resulting in a favorable recovery. CBC, blood gas, and electrolyte analyses were essential in the clinical and ultrasonographic examinations. It was concluded that these analyses were necessary to assess the presence or severity of hypoperfusion, as in the case presented.

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