



Congenital Unilateral Lateral Patellar Luxation in A Lamb

Ferda TURGUT^{1a}, Latif Emrah YANMAZ^{1b}, Sıtkıcan OKUR^{1c},
Mumin Gökhan ŞENOCAK^{1d}, Ugur ERSÖZ^{1e}

1. Atatürk University, Faculty of Veterinary Medicine, Department of Internal Medicine Erzurum, TURKEY.

ORCID: 0000-0003-2956-7548^a, 0000-0001-5890-8271^b, 0000-0003-2620-897X^c, 0000-0002-8855-8847^d, 0000-0002-1687-2327^e

Received	Accepted	Published
24.12.2021	28.12.2021	31.12.2021

To cite this article:

Turgut F, Yanmaz LE, Okur S, Şenocak MG, Ersöz U: Congenital Unilateral Lateral Patellar Luxation in A Lamb. Atatürk University J. Vet. Sci., 1(1): 18-21, 2021.

Abstract: In this case, the clinical and radiographic findings of a lamb with congenital and unilateral patellar luxation, together with its surgical treatment, are presented. A 15-day-old lamb was presented with complaints of weakness and lameness in the right hind leg. The radiographic and orthopaedic examination revealed a unilateral 3rd degree patella luxation. The patella was repositioned by performing medial imbrication and lateral release procedures. Following the surgery, the leg was fixed with a bandage for 10 days. Five weeks after the operation, the animal was able to use its feet normally. In conclusion, lateral release and medial imbrication may be sufficient for the treatment of lateral patellar luxation in lambs.

Keywords: Congenital, Lamb, Lateral, Luxation, Patella.

INTRODUCTION

Patellar luxation (PL) is a musculoskeletal disorder characterized by the deviation of the patella from its normal gliding motion over the trochlear groove (1,2). The patella deviates either dorsal, lateral, medial, or rarely ventrally (3). It has been suggested that different types of PL are caused by a multi-causal type of disorder; it is congenital in immature animals and acquired due to traumatic events in adults (2).

The patella is a large sesamoid bone embedded in the tendon of the quadriceps muscle of the femur (4). The femoropatellar joint arises from the trochlear groove of the femur and the patella. The trochlear groove consists of two oblique medial and lateral trochlears (5).

During patellar luxation, one or both of the trochlear ridges flatten, allowing the patella to slide out of its normal path (2). The fixation and movement mechanisms of the patella are mainly controlled by

the femoropatellar and patellar ligaments. This mechanism is lost in patellar luxation and causes joint locking (5). Patellar luxations have been described in many species, including dogs, lambs, rabbits, cats, foals, sheep and horses (6). It has been determined that the causes of patellar luxations may be congenital, developmental or traumatic (5). Causes of congenital patellar luxation involve weakness of the medial patellofemoral ligament, hypoplasia of the trochlear groove, medial rotation of the tibia, and the posture position in the uterus (7).

The treatment methods for patella luxation include, lateral or medial desmotomy, medial (lateral) imbrication of the joint capsule and fascia, lateral (medial) tibial tuberosity transposition, osteotomies of femur or tibia, and trochleoplasty (8). This case report was aimed to present the successful treatment of LPL in a lamb.

✉ Ferda Turgut

Atatürk University, Faculty of Veterinary Medicine, Department of Surgery, Erzurum, TURKEY.
e-mail: ferda.turgut@atauni.edu.tr

CASE PRESENTATION

A 15-day-old male pure-bred Akkaraman sheep weighing 10.5 kg was presented to Ataturk University, Faculty of Veterinary Medicine Animal Hospital, with severe unilateral right hind limb lameness and an inability to completely extend the stifle. The owner reported the calf has been reluctant and difficult to stand up.

During the clinical evaluation, no abnormality was observed in the lamb irregular posture, and gait. The patella was dislocated immediately to the lateral side of the bone after manual repositioning in the trochlear groove of the femur. A grade III unilateral congenital LPL was diagnosed. The quadriceps femoris muscle was also laterally deviated and poorly developed. The patellar reflex and withdrawal reflex were neurologically determined to be normal. Informed consent form was obtained.

The radiographic examination was performed under the xylazine (0.1 mg/kg IM, Xylazinbio 2%, Bioveta PLC, Komenskeho, Czech Republic) and propofol (3 mg/kg IV, Propofol % 1, Fresenius, Istanbul, Turkey) administration. The stifle radiographs obtained in craniocaudal and mediolateral directions confirmed the lateral displacement of the right patella (Figure 1-2).

The lamb was operated on after 8-hour fast. Prior to surgery, flunixin meglumine (1.1 mg/kg IM, Flumeglin, Teknovet, Istanbul, Turkey) and cefazoline (22 mg/kg IV, Cefamezin®, Eczacibasi, Istanbul, Turkey) were given. Premedication was performed with xylazine (0.1 mg/kg IM, Xylazinbio 2%, Bioveta PLC, Komenskeho, Czech Republic) and induced with ketamine (2.2 mg/kg IV, Ketasol, Richter Phama, Wels, Austria). During the surgery, an isotonic crystalloid fluid (NaCl 0.9%) was administered at a 10 ml/kg/h constant rate during the surgery.

The lamb was positioned in dorsal recumbency and aseptic preparation of the skin was achieved by using a hanging limb technique. A 5 cm medial and lateral parapatellar incision was performed on the

skin, then subcutaneous fascia, fascia genus, and joint capsule. The lateral femoro-patellar ligament and gluteo-biceps muscle were transected without invading the joint. The patella was replaced into the trochlear groove, then the medial joint capsule and the entire length of the patella were imbricated with simple interrupted sutures with USP 2 polydioxanone (PDS II, Ethicon, USA) without invading the femoro-patellar joint (Figure 3). The position of the patella was confirmed with flexion, extension, and rotation movements. The subcutaneous fascia, the subcutis layer, and the skin were closed in a simple interrupted suture with 2-0 polyglactin 910 (Vicryl, Ethicon, USA) and 2-0 poliglecaprone 25, respectively (Monocryl, Ethicon, USA).



Figure 1. Cranio-caudal radiograph of stifle joints with right patella luxated laterally (a) - Postoperative radiographic image of the replaced right patella (b).

The position of the patella was confirmed by radiography of the stifle. Postoperative treatment involved intramuscular administration of 2.5 mg/kg enrofloxacin (Baytril, Bayer, Istanbul, Turkey) and 1.1 mg/kg flunixin meglumine (Flumeglin, Teknovet, Istanbul, Turkey) for 5 days. The right limb was immobilized for 10 days following the surgery. The skin stitches were removed 13 days after surgery and

a radiographic examination was performed to verify the condition of the patella.

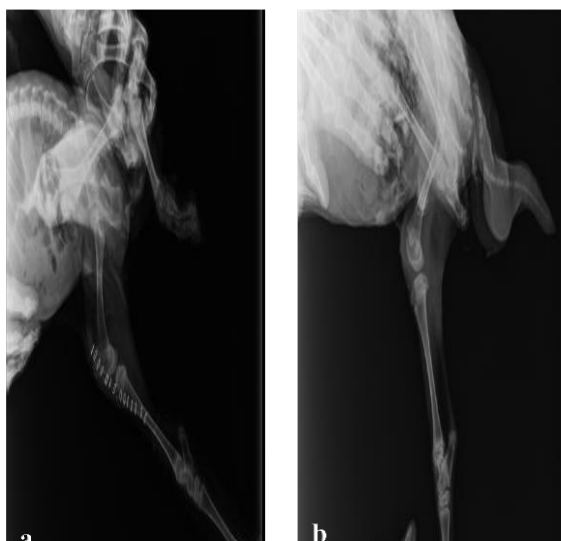


Figure 2. Mediolateral radiograph of stifle joints with right patella luxated laterally (a)- Postoperative radiographic image of the replaced right patella (b).



Figure 3. Intraoperative view of the lateral release of the patella and imbrication sutures of the medial retinaculum.

DISCUSSION and CONCLUSION

This case report documents the successful surgical treatment of unilateral, congenital lateral patellar luxation, evaluated by radiographic in a 15-day-old Akkaraman lamb. Congenital lateral patellar luxation is uncommonly observed in sheep (6). Patellar luxations have been reported in various species. The etiological reasons for patella dislocations are classified as congenital, traumatic,

and developmental (5,9). Traumatic events at the time of parturition, including prolonged parturition or malpositioning of the fetus during parturition, could result in rupture of the patellar retinacula, damage to the patellar tendon, or femoral nerve deficit with concurrent quadriceps dysfunction resulting in abnormal patellar location (10). Traumatic patella luxation is generally observed in large animals and mostly they are congenital (11). However, congenital patellar luxation was defined unilaterally in our case.

Surgical treatment of patellar luxation aims to neutralize the extensor mechanism and stabilize the patella in the femoral trochlea. Surgical treatment of LPL includes the lateral release of the patella followed by imbrication of the medial aspect of the joint capsule trochleoplasty, prosthetic trochlear ridge, or tuberosity medial transplantation (11). In this case, the sheep with LPL was treated successfully with a lateral parapatellar release incision in combination with imbrication of the medial joint capsule.

In conclusion, congenital LPL may be observed unilaterally in the sheep and LPL can be treated with lateral parapatellar release incision in combination with the implication of the medial joint capsule without the need for any other surgical method.

Conflict of Interest

The authors declare that they have no conflict of interest.

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