

Distal Metacarpus Fracture and Bandage Treatment in an Orphan Red Deer (*Cervus elaphus*) (Case Report)

*Bir Öksüz Kızıl Geyik Yavrusunda (*Cervus elaphus*) Distal Metakarpus Kırığı ve Bandajlı Tedavisi (Olgu Sunumu)*

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Abstract: In this case report, a 1-week-old female red fawn (*Cervus elaphus*), constituted the study material. In the clinical examination, posture disorder, malnutrition and severe lameness in both forelimbs in young deer were determined. Radiographic examination of the case revealed a distal diaphyseal transversal fracture in the left metacarpal bone, and a fracture in the lateral 1st and medial 2nd phalanx distal in the right anterior extremity. General anesthesia was not preferred due to possible malnutrition in the young deer, and the treatment of the fracture was accomplished by placing bandage application. After the first week of bandage application, open wound formation on the foot was noticed and wound treatment was performed by opening a window on the bandage. This case report aimed to show our colleagues and other readers about the red deer, which is taken under protection due to the decrease in its population in Turkey, that multiple fractures can be treated with bandage application.

Keywords: Cast, Metacarpal fracture, Non-invasive/non-interventional treatment, Red deer (*Cervus elaphus*).

Öz: Bu olgu sunumunda, çalışma materyalini 1 haftalık dişi bir kızıl geyik (*Cervus elaphus*) yavrusu oluşturdu. Yapılan klinik muayenede yavru geyiklerde postür bozukluğu, malnütrisyon ve her iki ön ayakta şiddetli topallık tespit edildi. Olgunun radyografik incelemesinde sol metakarpal kemikte distal diafiz transversal kırık ve sağ ön ekstremitede lateral 1. ve medial 2. falanks distalinde kırık saptandı. Yavru geyikte olası yetersiz beslenme nedeniyle genel anestezi tercih edilmedi ve kırığın tedavisi bandaj uygulaması yapılarak sağlandı. Bandaj uygulamasının ilk haftası sonrasında ayakta açık yara oluşumu fark edildi ve alçı üzerine pencere açılarak yara tedavisi gerçekleştirildi. Bu olgu sunumu ile Türkiye'de popülasyonunun azalması nedeniyle koruma altına alınan kızıl geyiğin çoklu kırıklarının bandaj uygulaması ile tedavi edilebileceğini meslektaşlarımıza ve diğer okuyucularımıza göstermek amaçlandı.

Anahtar Kelimeler: Bandaj, Kızıl geyik (*Cervus elaphus*), Metakarpal kırık, Non-invaziv/girişimsiz tedavi.

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Introduction

Newborn fawns have the lowest survival rate of any age class and are more susceptible than adults to a variety of death threats, including predators. Disease and malnutrition are among the most common death threats, partly due to the limited mobility of young deer, their underdeveloped immune systems, and their dependence on their mothers for nutrition (Gaillard et al., 1998,

Delguidice et al., 2006). In addition, the habitat type that does not provide adequate hiding opportunities and the long distance between feeding sources affect their threat by predators (Jakson et al., 1972, Scwede et al., 1994). How individuals in a population use habitat can affect their survival by changing their exposure to certain death threats (Hasapes and Comer, 2017, Lendrum et al., 2018). Choosing habitat types that provide a hiding place to give birth may reduce the

risk of predation among newborn fawns protected by hiding, while being away from roads reduces the risk of collision with vehicles (Etter et al., 2002, Piccolo et al., 2014). Deer-vehicle collisions are seen as an important animal welfare problem in Europe and North America and are a major cause of death (Langbein, 2007). In a study conducted in roe deer with fracture findings, it was stated that sedation applied during transport, preoperative intervention and postoperative rehabilitation procedures is the most important factor necessary to prevent stress and related mortality (Nispet et al., 2010). In adult deer, major surgery and prolonged recovery stress factors are contraindicated in low welfare situations. Such highly stressed animals can only be rescued under proper care and housing conditions. Teenagers, on the other hand, tend to be relatively calmer than adults, so they are less likely to injure themselves and recover more quickly (Green, 2003).

In the treatment of fractures, bandaging technique supported by some materials such as polyvinylchloride (PVC) and aluminum or splinting alone or combined with a bandage, such as the Modified Thomas Splint technique, is used as a treatment option for external fixation of closed fractures. Internal fixation techniques using techniques such as intramedullary nailing, cerclage wire, screws, dynamic compression plates, are recommended for the fixation of displaced, comminuted and complicated fractures (Arıcan et al., 2013). It has also been used in fracture treatment in interlocking pins in recent years (Arıcan et al., 2017).

In this case report, it was aimed to return the multiple fractures of an endangered red fawn cub to its habitat with bandage treatment.

Case Presentation

In this case report, a 1-week-old orphaned female red fawn (*Cervus elaphus*), one of the world's largest deer species, evaluated as Least Concern in the Red List of the International Union for Conservation of Natural Life and Natural Resources, and whose number is decreasing day by

day in our country, constituted the study material (Figure 1). The red fawn was brought to Afyon Kocatepe University Wildlife Rescue Rehabilitation Training Application and Research Center (AKÜREM) in July 2020 by the authorities of the 5th Regional Directorate of Nature Conservation and National Parks, Eskişehir Branch, with the notification of the villagers in the countryside of Eskişehir, who were exhausted and could not stand up. He was directed to the Veterinary Health Application and Research Center for consultation.



Figure 1. A view from the process of staying in the bandage of the Red Fawn.

In the clinical examination, posture disorder, malnutrition and severe lameness in both forelimbs in young deer were determined. From the bruises on the pup, it was concluded that he was injured while escaping from a predator or human. Radiographic examination of the case revealed a distal diaphyseal transversal fracture in the left metacarpal bone, and a fracture in the lateral 1st phalanx and medial 2nd phalanx distal in the right anterior extremity (Figure 2).



Figure 2. Radiographic view of anterior extremities in antero/posterior position in Red Deer and a transversal fracture in the distal diaphysis area of the left metacarpal bone and a fracture in the right lateral 1st phalanx and medial 2nd phalanx distal.

General anesthesia was not preferred due to possible malnutrition in the young deer, and the treatment of the fracture was accomplished by placing bandage application, with mild sedation (Xylazine hydrochloride, 0.2 mg/kg, im) was kept under follow-up (Figure 3). The fawn, whose care and treatment continued in AKÜREM after the bandage, was fed with a bottle. After the first week of bandage application, open wound formation on the foot was noticed and wound treatment was performed by opening a window on the bandage. Appetite and motility returned to normal within a week in the pup, which showed rapid recovery after bandage, and the start of using the relevant extremity was completed in 20 days (Figure 4). Full functional recovery of the red fawn, which used its foot springly after this period, took 90 days.

Discussion

The deer being a calf and the choice of the fracture stabilization method; A rapid improvement was observed in this case, as the young deer were followed up with an assisted bandage, did not

undergo a surgical operation, healed quickly in young deer, were tolerant of captivity, and were less likely to injure themselves further. However, it was concluded that it is also important to take measures to prevent the mammalian offspring from getting used to humans while raising them.



Figure 3. Rigid plaster bandage application to the front extremities in Red Deer.



Figure 4. Radiographic image of fore limbs in medio/lateral position in Red Deer and a transversal fracture in the distal diaphysis area of the left metacarpal bone and a fracture in the right lateral 1st phalanx and distal medial 2nd phalanx.

Various techniques for treatment of extremity fractures are recommended by surgeons as depending on some factors such as type and localisation of fracture, type and severity of trauma, choice of treatment, genetical value of animal, cost of treatment and the conditions of management. It was reported that highly successful results have been obtained in the calves treated with techniques of bandage and splint (Aksoy et al., 2009, Gangl et al., 2006, Görgül et al., 2004, Latrach et al., 2006). In this case, treatment with bandage application was successful. This result is similar to the literature.

It was aimed to inform our colleagues and other readers and to raise awareness in this case of broken offspring belonging to the red deer species, which has been taken under protection because its population is decreasing in Turkey.

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