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Caesarean operation in two farmed red deer (*Cervus elaphus*)

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Abstract: In this case, a caesarean section was performed on 2 red deer aged 4 and 7 who underwent dystocia. When the deer were brought to our clinic, they had been in labour for 6 h and 1 day, respectively, and the calves were dead. The foetal forefeet were found hanging from the vulva at the general examination. Deer 1's parturition was human-assisted but the outcome was not good and it was decided to operate on the animal. In deer 2, parturition was taking too long and so it was decided to operate immediately. The deer were sedated and anaesthetised by infiltration of the left paralumbar fossa in order to perform the caesarean operations. The caesarean operations were performed successfully and both red deer are still alive. For a postoperative period of 5 days, an antibiotic and vitamin combination was administered to both deer. It is concluded that for red deer in whom dystocia is common a caesarean operation can be the treatment of choice.

Key words: Red deer, dystocia, caesarean operation

İki kızıl geyikte (*Cervus elaphus*) sezaryen operasyonu

Özet: Bu makalede 4 ve 7 yaşlarındaki iki kızıl geyikte meydana gelen güç doğumda uygulanan sezaryen operasyonu anlatıldı. Geyikler fakülte kliniğine getirildiklerinde ilk geyikte doğum altı saat önce, diğer geyikte ise bir gün önce başlamıştı ve her iki yavru da ölüydü. Genel muayenede iki geyikte de yavru ayaklarının vulvadan sarktığı görüldü. Birinci vakada yavruya önce elle müdahale edildi fakat başarılı olunamadı, ikinci vakada ise doğumun üzerinden çok uzun bir süre geçtiği için hasta hemen operasyon sezaryene alındı. Operasyon sezaryenler her iki geyikte de sedasyon altında sol fossa paralumbalisten infiltrasyon anestezisi uygulanarak yapıldı. Operasyon sonrası her iki geyiğe 5 gün boyunca antibiyotik ve vitamin kombinasyonu uygulandı ve operasyon sonrasında geyiklerde herhangi bir problemle karşılaşılma. Sonuç olarak, doğal olmayan koşullarda bakılan kızıl geyiklerde oldukça sık rastlanılan güç doğumlara operasyon sezaryenle müdahale edilebileceği kanısına varılmıştır.

Anahtar sözcükler: Kızıl geyik, güç doğum, operasyon sezaryen

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Introduction

Red deer is one of the species of temperate cervidae that exhibit seasonal breeding as well as a sexual cycle and give birth throughout the year. The duration of their sexual season could be identified as a short cycle that lasts 10-12 days, and a long cycle lasting 18-25 days. Silent ovulations could occur at the onset of the breeding season in cervidae such as Fallow deer, Red deer, Alaskan reindeer, Formosan sika deer, and Wapiti deer (1). The mean gestation period of red deer is 233 ± 7 days (2), but Wass et al. (3) also reported the red deer's gestation period as 9 months. Asher et al. (4) reported that all hinds calved at 227-245 days of the gestational period in their study. Total deaths due to dystocia were reported as 28.6% in one study (1) and Audige et al. (5) reported common hind mortality caused by dystocia, broken bones, and malignant catarrhal fever on the red deer farms of New Zealand. This paper describes the caesarean operation performed on 2 farmed red deer (*Cervus elaphus*), aged 4 and 7.

Case history

Two free-ranging red deer, aged 4 and 7 years, weighing 105 and 118 kg, bred in large paddocks and domesticated as livestock on a farm in İstanbul, were presented, in 2008 and 2010 respectively, at the Faculty of Veterinary Medicine, Department of Obstetrics and Gynaecology at İstanbul University. Adult hinds and stags were kept in the same area in individual pens and were fed twice daily with a balanced diet (alfalfa, hay soybean meal, and mineral and vitamin supplements), good quality silage, and ad libitum fresh water. As the hinds mated naturally with the stags, no information is available about the time of mating. Both deer were multiparous and it was the second parturition of deer 1 and third parturition of deer 2. At the time of parturition, deer 1 had been in labour for 6 h and the other for 1 day. The legs of the calves were visible at the vulva in both deer when they were brought to the clinic (Figure 1). In deer 1, dystocia occurred because of false presentation of the foetus with the head and neck turned back over the body. This deer's parturition was initially human-assisted but with an unsatisfactory clinical outcome, and so it was decided to perform a caesarean section. The other deer's foetus was in normal position but the



Figure 1. Image of the calves' legs at the vulvar lips in both of the deer.

offspring was bigger than the canal's opening. It was decided to operate on the second deer immediately as parturition had taken too long. The same procedures were implemented in both operations. The deer were sedated with 1 mg/kg xylazine (Basilazin[®], Bavet, İstanbul, Turkey) given intramuscularly and for the caesarean operation they underwent infiltration anaesthesia with 2% lidocaine HCl (Jetokain[®], Adeka, Samsun, Turkey) at a dose of 45 mL. The deer's left paralumbar fossae were shaved and sterilised. The flank approach technique was used in both deer. A vertical or slightly oblique incision was made at a point centred between the tuber coxae and the last rib. The muscles were manually separated from the centre of the incision towards the dorsal and ventral aspects. A gloved hand was introduced into the peritoneal cavity and extended in a caudal direction to find the uterus. The uterus was then exteriorised through the incision. Finally, another incision was made parallel to the long axis of the uterus and the calf was removed. Antibiotic boluses were inserted into the uterus prior to its closure. The cut surface of the uterus was sutured continuously with an absorbable material. Once the uterus was closed, it was replaced into position and the laparotomy incision was sutured using the Cushing method (Figure 2). For a postoperative period of 5 days, both deer were administered enrofloxacin (Vetрил[®] 10%, 20 cc vial, Vetaş, İstanbul, Turkey) at 5 mg/kg body weight subcutaneously and a vitamine B combination (Berovit B₁₂[®], 100 mL vial, Doğu İlaç, İstanbul, Turkey)



Figure 2. Closure of the laparotomy incision.



Figure 3. Image of the dead calf.

at a dose of 15 mL intramuscularly. The calves were dead in both parturitions (Figure 3). The calf of deer 1 was male (Figure 3) while the calf of deer 2 was female. The caesarean operations were performed successfully and both red deer are still alive.

Results and discussion

In deer, the calving period lasts an average of 84 min, beginning from the appearance of the amniotic sac until the total emergence of the calf (3). In our cases the calves had not been born despite the fact

that 6 h and 1 day, respectively, in deer 1 and deer 2, had elapsed from the appearance of the amniotic sac. Therefore, we were convinced that these were cases of dystocia and decided to operate on the deer. Dystocia can develop in smaller female deer of the population. In domesticated ruminants, including farmed red deer (*Cervus elaphus*), foetomaternal disproportion results mainly from a smaller opening and foetal oversize due to maternal over-nutrition during the prenatal period and crossing with a large sire (6). Furthermore, Gill (7) noted dystocia commonly occurs because of false presentation of the calf. In our cases, in the parturition of deer 1, dystocia occurred because of false presentation of the foetus, with the head and neck turned back over the body, while the foetus of deer 2 was normal in position but the offspring was bigger than the canal's opening. In the studies, females of the sika deer can die because of dystocia at primiparity, and so dystocia is not a negligible factor of mortality. Especially when compared to primiparous females, multiparous females have a lower chance of dystocia partly because of late maturation of the pelvis (6). The rate of dystocia was reported as higher for heifers than for adults (8). Additionally, there is a belief that dystocia occurs much more in overweight deer than in thin deer, and so in the last trimester of pregnancy, care must be taken about weight gain. Finally, genetic factors from the dam and sire may contribute to the occurrence of dystocia (9). Dystocia contributes to economic losses on deer farms worldwide. Caesarean operations can play an important role for hinds that are brought with the claim of dystocia in order to save both the hind and calf for deer farmers. In the literature, the loss of the hind and calf because of the advanced complaint of dystocia was reported (5,6,8). In this case we reported the preserving effect of the caesarean operation in hinds. Caesarean section performed at the beginning of the parturition in dystocia could be a lifesaver for the calves and the hinds.

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