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## Legg Calve Perthes Seen in a Tabby Cat (A Legg Calve Perthes Case in a Cat)

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**ABSTRACT:** The disease was first described in humans in 1910 by three researchers, Legg, Calve and Perthes. It has been named as a hip disorder of unknown etiology that occurs in childhood. In the following years, it was determined that the disease was caused by avascular necrosis caused by the obstruction of the blood flow feeding the growing femoral head. In animals, the disease is seen as a developmental abnormality that mostly affects small breed dogs. It was first diagnosed by Tuff in 1935 in a Cairn terrier dog. This disease is much less common in cats than in dogs. A healthy cat's hip joint has a ball-and-socket shape. While the femoral head forms the "ball" part, the "socket" part consists of the depression called acetabulum in the pelvis. Ligaments and cartilages hold this structure properly and enable smooth joint movement. If the blood circulation feeding the joint is blocked, the femoral head is damaged and begins to break down. Ischemia occurs in the region, leading to the death of surrounding tissues and cartilage. The joint cannot function properly due to the malformed shape of the femoral head, which causes Legg-Calve-Perthes Disease (LCPH). The deformed joint becomes inflamed and arthritis develops. In such a case, the patient experiences severe pain. As the process progresses, the situation gradually worsens and the joint becomes unable to bear weight. The treatment protocol for the disease is still not fully finalized. However, the common goal is to correct the deformation in the hip joint and prevent degenerative joint inflammation. In this study, the rare case of Legg Calve Perthes in cats was observed unilaterally in a 1-year-old, castrated male, tabby cat. Excisional arthroplasty was performed on the right caput femoris, which had avascular necrosis. In the postoperative follow-up of the patient, it was observed that the right leg lameness had disappeared and all joint movements were performed without any problems. This situation was also revealed by radiological controls.

**Key words:** Avascular femoral head necrosis; cat; excisional arthroplasty; Legg Calve Perthes.

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## CASE HISTORY

A one-year-old, castrated cat was brought to Istanbul Vetmemorial Veterinary Clinic with complaints of lameness and severe pain in the right hind leg. In the orthopedic examination of the patient, severe pain in the hip joint along with right hind leg lameness was detected. A direct radiograph (Medical Econet) taken in the ventro dorsal position showed a deformation in the right caput femoris (Figure 1).

Excisional arthroplasty was performed on the right caput femoris (Figures 2 and 3). In the anesthesia protocol, after 1 mg/kg xylazine i.m. premedication, anesthesia induction was performed with 4mg/kg Propofol i.v., followed by inhalation anesthesia with Isoflurane (Matrx).

In the clinical examination performed in the second week after the operation, it was determined that the patient could use his foot comfortably and the pain had disappeared. In the examination performed two months after the operation, it was determined that the patient could run and jump easily. Radiologically, since the excision was performed adequately, no bony growth that could threaten the joint was formed in the relevant area (Figure 4).

## DISCUSSION

Legg Calve Perthes (LCPH) disease is frequently seen in the veterinary medical literature, mainly in miniature breed dogs such as Miniature Poodles, Yorkshire Terriers, and Dachshunds during their growth years. This disease occurs very rarely in cats. For this reason, there is not enough literature information about LCPH in cats compared to dogs. The case in this study is a tabby cat.

In LCPH, both hip joints are generally affected equally (12-16.5%) (Bojrab, 1993; Houlton, 1994; Mickelson et al., 1981; Piermattci and Flo, 1997). However, in the presented case, the disease was unilateral.

There is no gender bias, but males have been reported to be effected four times more frequently than females (Bojrab, 1993; Houlton, 1994; Mickelson et al., 1981; Olmstead, 1995). It has been reported that the disease is generally seen between the ages of 5-8 months (Bojrab, 1993; Mickelson et al., 1981; Olmstead, 1995). In this study, the patient was a 1-year-old male cat.

Although the etiology of the disease is not fully known, impaired circulation in the blood vessels



**Figure 1.** Avascular necrosis in the right caput femoris.



**Figure 2.** Cutting of degenerated caput femoris with osteotome.



**Figure 3.** Excised caput femoris.



**Figure 4.** Control x-ray taken two months after the operation.

feeding the femoral head is considered essential. A systemic inflammation in animals may play a central role in bone destruction and remodeling and can lead to the emergence of LCPD as well as more severe forms of the disease (Azarpira et al., 2019; Azarpira et al., 2018). It is important to note that malnutrition, such as obesity, will exacerbate the occurrence of LCPD in different ways (Lappin et al., 2003; Neal et al., 2016; Larson et al., 2013; Zhang et al., 2009). Although the mechanism here is not fully understood, it is thought that developmental anomaly or trauma may be the trigger factor. In the case we encountered, the cat had a history of trauma a long time ago, but the lameness developed later. In this case, it is thought that the obstruction of blood circulation in the vessels feeding the femoral head at the time of the initial trauma causes avascular necrosis in the process. When the patient was brought to the clinic, significant lameness and severe pain were detected in the right hind leg. In the direct ventro dorsal radiograph taken, it was understood that the disease was avascular necrosis of the femoral head. As stated in many literatures, the aim of the treatment was to eliminate the pain and relieve joint movements by removing the degenerated femoral head and neck. The operation was performed using the excisional arthroplasty technique under general anesthesia.

Insufficient removal of bone at surgery can cause persistent discomfort, possibly as a result of ongoing bone-to-bone contact (Off and Matis, 2010). In the presented case, it was observed that two weeks after the operation, the patient could use the relevant foot easily and the pain symptoms disappeared. In the clinical examination performed two months later, it was determined that the patient could move its right hind leg easily and there was no pain. Again, in the control radiography taken during this period, no bony growth was found in the joint as the femoral head and neck was completely excised in accordance with the technique.

In conclusion, the Legg Calve Perthes phenomenon, which is stated to be very rare in cats, was the subject of this study. It was understood that the treatment method applied to the patient was successful.

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#### CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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