Case report

Amputation at the Mid Femur of a Libyan Doe

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Abstract
Complicated chronic fractures are common affections in farm animals because of the difficulty of noticing bone fractures by owners immediately after their occurrence particularly in large flocks. This report describes the surgical amputation of the left hind limb in an adult, Libyan Doe due to an infected, compound fracture involving the proximal diaphysis of tibia. The decision was made to perform an amputation, because there were local infection and moist gangrene in the distal part of the leg, and to save the animal's life. The amputation was conducted under the effect of local anesthesia only. The Doe was completely recovered and able to walk on three legs few days post-surgery. This report illustrates almost the simplest way to perform this procedure with a very low possibility of countering side effects.

Key words: Libyan Doe, surgical amputation, open tibial fracture, moist gangrene

Introduction

In sheep and goats, limb amputation could be performed to save the life of animals in some incurable conditions such as orthopedic infections, bone tumors and congenital deformity (Withrow and Hirsch 1979; Frank 1981; Fubini and Ducharme 2004). In veterinary field, the surgical amputation of limb in farm animals is uncommonly practiced, because it is not a cost effective procedure. However, this type of surgical operations is relatively common in small animals with the same aforementioned indications (Fossum 2013).

To the best of our knowledge, there is only one paper describing the surgical amputation in a goat (Pal *et al* 2011). This study reported a surgical amputation of left hind limb in Black Bengal goat suffered from open complicated fracture with gangrene. The surgical procedure was performed under the effect of epidural anesthesia and the operation was successful. The present report describes a case of complicated fracture of the left hind limb of an adult Libyan breed Doe admitted to the Veterinary Teaching Hospital of the Faculty of Veterinary Medicine, University of Tripoli and its successful surgical amputation.

History

An adult Libyan breed Doe was admitted to the Veterinary Teaching Hospital of the Faculty of Veterinary Medicine, University of Tripoli with chronic, complicated fracture involving the left hind limb (Figure 1). According to the owner's history, the Doe is kept with males and there is a possibility of pregnancy. The Doe was injured during jumping from fence in the farm and the fracture was fixed by the owner using two woody sticks and treated with a single dose of systemic antibiotic.

Clinical examination

After admission to the Veterinary Teaching Hospital, the Doe was thoroughly examined. The body temperature was normal and the general condition was good. The animal had an open infected fracture at the proximal diaphyseal part of the left tibia as revealed by physical examination. During attempting to align the fractured bone, a moist gangrene, coldness and skin sloughing were noticed over the distal limb. The Doe was put under five-day-course of Ampicillin and Streptomycin (Kela company, Belgium) to prevent spreading of infection.

Figure 1: The Doe as admitted to the Veterinary Teaching Hospital with an old complicated fracture involving the left hind limb.

Surgical intervention

Based on the clinical examination, a decision was made to proceed with surgical amputation of the affected hind limb. The surgery was performed after three days from starting the medical treatment.

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a. Pre-operative protocol

Before surgery, the animal was fasted for 24h. The operation site was prepared by shaving, washing with soap and water and then disinfected with 2% Povidone Iodine solution. Local infiltration was performed around the incision site using 2% Lidocaine (Vetoquinol, France) at a dose of approximately 1mL/cm of skin surface. The animal was restrained in the right lateral recumbent position. 2% Povidone iodine solution was applied over the surgical site immediately before operation. A tourniquet was applied on the leg above the site of incision to reduce blood loss during surgery. A slow intravenous drip of normal saline and 5% dextrose solution was provided to the Doe during the operation.

b. Surgical approach

A skin incision was made at the level of mid femur. Medially, the femoral artery was ligated and severed just proximal to the saphenous artery. The vein was ligated and severed at the same position. The tensor fascia latae, quadriceps, and biceps femoris muscles were transacted. Then the biceps femoris and quadriceps muscles were reflected proximally and the sciatic nerve was severed. The semimembranosus, semitendinosus and adductor muscles were transacted. The leg was elevated and the gracilis, sartorius and pectineus muscles were transacted. The femur was then cut at the mid-shaft. Finally, the quadriceps and biceps femoris muscles were sutured to the semimembranosus, semitendinosus, gracilis and the sartorius muscle using an absorbable suture material in a simple continuous suture pattern. The skin was finally sutured using a non-absorbable suture material in a horizontal mattress suture pattern (Figure 2).

Figure 2: The Doe after surgical amputation of the affected limb.

Results and discussion

In the present report, a surgical amputation at the middle of left femur to save the life of a Libyan Doe was successfully performed. After the operation, the animal tolerated well walking on only three legs. The surgical wound was completely healed without any postoperative complications at 20 days after the surgery.

Amputation of lower extremity is one of the oldest known surgical procedures conducted to treat incurable affections of body extremities (Murdoch 1996).

The operation was conducted only under the effect of local infiltration anesthesia without using a premedication agent nor performing an epidural anesthesia, which makes this protocol quite simple with low side effects. Our findings correlate well with those previously reported (Withrow and Hirsch 1979; Frank 1981; Fubini and Ducharme 2004; Pal *et al.* 2011).

Limb amputation surgical procedure can be smoothly performed to save the life of farm animals. Furthermore, in small animals, such procedure has been found to be helpful in treating malignant bone tumors (Julius *et al.* 2005).

Although limb amputation is relatively simple procedure, the current report illustrates almost the simplest way to perform this procedure with a very low possibility of countering side effects. Additionally, the lack of information about this simple procedure in the veterinary literature has promoted writing this case report to provide some beneficial knowledge to the local veterinarians.

References

Fossum TW (2013). *Small animal surgery* (4th edn.). Elsevier Mosby, St. Louis, Missouri: pp 705-777.

Frank ER (1981). In Affections of the posterior limb care of the feet, lameness, unsoundness and colors. *Veterinary Surgery* (1st edn.). CBS Publishers and Distributors, Delhi: pp 320.

Fubini S and Ducharme N (2004). *Farm animal surgery*. Elsevier, St. Louis, Missouri: pp 100.

Murdoch G and Wilson AB (1996). *Amputation: Surgical Practice and Patient Management*. Oxford: Butterworth-Heinemann: pp 170.

Julius ML, William SD, Scott AR and Stephen JW (2005). Partial foot amputation in 11 dogs. *J Americ Anim Hosp Assoc*. 41: 47-55.

Pal SK, Baral S, Chakraborty S and Haldar A (2011). Amputation of hind leg in Black Bengal goat – A case report. *Case Study Case Rep*. 1: 177-180.

Withrow SJ and Hirsch VM (1979). Owner response to amputation of a pet's leg. *Vet Med Small Anim Clin*. 74:332-334.