

A Case Report on Amputation of Left Hind Limb in a Cat



A Clinical Report Submitted by

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Intern ID: 29

Roll No: 16/32

Registration No: 01647

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Abstract

Limb amputation is a salvage surgical procedure relatively common in small animals and other species. The purpose of the present case report was to describe a surgical approach for left hind limb amputation in a cat. The case was recorded in the Teaching and Training Pet Hospital and Research Centre (TTPHRC), Purbachal, Dhaka during an internship placement. A three-year-old cat weighing 5.5 kg was presented to TTPHRC with a history of leg carrying lameness following an auto accident. On clinical examination, gangrene of the limb was found. It was decided to amputate the hind limb following standard surgical approach. General anesthesia was given and maintained throughout the surgery. As a part of post-operative care systemic antibiotic, pain killer and antihistaminic were administered with protective bandages. The cat recovered quickly from surgery and was able to walk on three legs. The cat was able to bear weight on three limbs within 45 days after the amputation and showed satisfactory body condition and function of the existing three limbs.

Key words: Amputation, Cat, Limb, Surgery

Introduction

An amputation is a common surgical procedure where a pet's limb is removed following a severe injury or disease of limbs. This surgical method has been considered a viable option in animals to treat severe trauma, infection, degenerative diseases, malignant neoplasm and congenital limb deformity (Gamsjaeger and Chigerwe, 2018; Weigel, 2003). Limb amputation is often the best way to relieve a pet's suffering if a bone cannot be fixed due to any innumerable reasons. Amputation relieves pain and allows the pet to return to normal or near-normal activity. Recovery from an amputation is usually rapid, and many patients able to stand and walk shortly after surgery.

Amputation can sometimes be the best decision for quality of life and pain relief for animals with debilitating and painful disease. Prior to limb amputation, the health condition of the pet, the location and type of limb lesion, the pet's physical ability to adapt after surgery, and owner's perception must be considered. Orthopedic and neurological evaluation should also be carefully performed before the amputation (Ferreira et al., 2019). Amputation is very well tolerated by dogs and cats, provided they do not have extensive neurologic or orthopedic disease affecting other limbs. Patients that have significant mobility issues other than the affected limb may not be candidates for amputation.

Generally, complications are not developed in an aseptic surgery. But some complications may be happened if mismanagement during post-operative care takes place. Risk of the procedure and common complications include bleeding, inflammation and wound infection, necrosis, skin ulceration, gangrene, Acute Myocarditis, seroma/water accumulation, chronic intermittent pain, chronic lameness, and post-operative swelling at the surgery site (O'Hagan, 2006; Hymavathi et al., 2014; Raske et al., 2015).

The present report deals with a case of hind limb amputation and its successful surgical management in a cat.

Case description

A 3-year-old male cat weighing 5.5 kg with a major leg injury due to an auto accident was rescued by rescuers from Bashundhara Residential Area in Dhaka. The cat was presented to the Teaching and Training Pet Hospital and Research Centre (TTPHRC) at Purbachal, Dhaka for clinical examination and treatment. After examining the cat, a significant bone fracture was seen with a bruised lesion extending from the hock joint to the phalanges of the left hind limb. On assessment of the patient, heart rate and respiratory rate were found 150/bpm and 30/minute, respectively. Increased temperature (104 °F) was recorded. The clinical signs included severe pain, red skin that felt warm to the touch, lameness, and wet gangrene of the limb marked by an offensive odor. Mild dehydration was also noted by observing mild pink mucous membrane. It was decided to amputate a partial hind limb to prevent the spread of necrosis and gangrene to healthy tissues. Prior to surgery, verbal consent from the owner was taken. General condition of the patient was also noted before performing the surgery.

Preparation of the surgery

The cat was initially sedated with xylazine (Inj. Xylazine[®], 30 ml vial) administered intramuscularly @ 1.1 mg/kg body weight. Following sedation, the incision site from the stifle joint to the bottom was prepared aseptically by shaving the area and treating with 10% povidone-iodine (Solution Viodin[®], 100 ml bottle) by spraying and rubbing it on (Fig 1).

Anesthesia

Ketamine HCL (Inj. Ketalar[®], 10 ml vial) was administered intravenously @ 10 mg/kg body weight. Throughout the entire procedure, 0.9% Sodium Chloride (Normal saline[®], 500ml) was constantly infused into the cephalic vein. During surgery maintenance dose of Ketamine HCL (every time, half of its previous dose) was given several times based on patient condition. The vital signs (heart rate and respiration rate through stethoscope, oxygen saturation by pulse oximeter, temperature by thermometer) were monitored carefully.

Surgical procedure

The operative site was cleaned with antiseptic (Povidone Iodine 10%) and 70% alcohol. Along with the tibia and fibula bones, a straight skin incision was made (Fig 2). The incision was made around 2 cm laterally and 3 cm medially to allow for more skin on the medial

portion of the limb. The tibia and fibula had the gastrocnemius muscle excised (Fig 3). At the level of the stifle joint, the saphenous artery and popliteal artery were located, and hemostasis was achieved by vasoconstriction with straight artery forceps and ligation with 2-0 catgut (Fig 4). At the level of the stifle joint, the anterior and posterior cruciate ligaments were likewise incised with severe dissection. After that, an incision was made to disarticulate the stifle joint (Fig 5). After disarticulation, the wound was stitched up by 2-0 catgut walking sutures, which were affixed to the subcutaneous tissue (Fig 6). Simple interrupted sutures utilizing 1 cm silicon were used to seal the skin (Fig 7). To minimize fluid buildup, a few holes between the sutures were provided. A bandage was provided to prevent the contamination.

Postoperative care

Following surgery, the cat was received supportive care in the hospital. For 30 minutes, the patient received 50 ml of oxygen per minute. 5% povidone-iodine (Ointment Viodin[®], 25 gm tube) was applied at the suture site (Fig 8). After surgery, the patient received the following medications: Ceftriaxone (Inj. Triject Vet[®] 250 mg, 2 ml vial) as an antibiotic @ 20 mg/kg body weight; Chlorpheniramine Maleate (Inj. Renacin Vet[®], 10 ml vial) as an antihistaminic @ 0.5 mg/kg body weight and Meloxicam (Inj) (Fig 9). To prevent licking, an Elizabethan collar was worn (Gangwar et al., 2020). The owner was also advised to apply Viodin Ointment for a period of 15 days as an antiseptic and Bacitracin Zinc + Neomycin Sulphate Tropical (Nebanol[®] Powder) as a topical antibiotic at the suture site. The cat was able to walk on three limbs after the procedure, which took around 4 hours. In order to keep an eye on the suture site, bandage changes were planned every two to three days. It was observed that the skin incision had healed properly throughout this period. Regular bandage changes were made up until the cat was mobile on limbs and showed no signs of discomfort after this recuperation (1 month).

Figures



Fig 1: Preparation of the patient and the site of surgery



Fig 2: Incision on skin



Fig 3: Incision on muscle



Fig 4: Ligation of blood vessel

Figures



Fig 5: Separation of stifle joint



Fig 6: Suturing on muscle



Fig 7: Closing of the site of surgery by suturing on the skin



Fig 8: Application of povidone iodine



Fig 9: Post-operative care

Results

The cat did well while receiving post-operative care. The patient was brought in for a follow-up examination one week after treatment ended. The cat was still able to move around on its three remaining limbs, and no complications from water retention or any indication of pain in the amputated limb were noted. The cat was able to use three limbs for weight bearing within 45 days after the amputation. The cat was completely pain-free and was using all three of his legs to play.

Discussion

Amputation of lower extremity is one of the oldest known surgically performed procedures. In the present study amputation of the left hind limb was performed below the hock joint. Surgeons have to follow some general principles of surgery like gentle handling of tissues, aseptic surgery, anatomical dissection, controlling hemorrhage, obliteration of dead space, using minimum quantity of suture materials, avoidance of suture tension, immobilization etc. (Tyagi and Singh, 1995). Previously, limb amputation was done in various animal like cat, dog, sheep, goat etc. for various reasons (O'Hagan, 2006; Hymavathi et al., 2014 and Raske et al., 2015).

Sometimes, during post-operative care different types of complications were occurred. According to Boylan et al. (2019), after limb amputation of a cat's right hind limb due to metatarsal osteosarcoma, a little complication of ulceration occurred at the surgical site. Previously scientists (Forster et al., 2010) performed a study on 294 cats in which amputation was done for different reasons. Among them, 35% of cats experienced some signs of pain during recovery. Raske et al. (2015), reported 20.9% of wound infection after having a study on 39 dogs and 28 cats of limb amputation. Also, Gamsjaeger and Chigerwe (2018), mentioned chronic intermittent pain in some sheep and goat following limb amputation.

This case report experienced with no complications related to water accumulation while receiving postoperative care. It happened because during surgery, some skin sutures were left with small gaps that weren't there in earlier research.

This report aids surgeons in presenting a comprehensive understanding of limb amputation surgery, including preoperative and postoperative management, and aids in preventing complications following surgery.

Conclusion

Amputation is currently a regular surgical procedure for treating sick or malformed conditions. As a result of a successful operation and subsequent postoperative care and management, this case has a satisfactory outcome.

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