

Introduction

The word amputation is derived from the Latin word amputare “to cut away” where ambi “about”, “around” and putare “to prune”. In the past time, there were few common words which were used instead of amputation such as extirpation, disarticulation or simply cutting. After the end of 17th century the term “amputation” was accepted globally (Mishra, 2014).

Causes of limb amputation:

A surgeon need to go through amputation for many reasons. Most common causes for limb amputation (Jongeward, 1985; Gamsjaeger and Chigerwe, 2018) are listed bellow:

1. Trauma (e.g., fracture, dog bite, wire fence injury etc.)
2. Infections
3. Degenerative Diseases (e.g., osteomyelitis, osteoarthritis etc.)
4. Bone tumors etc.

Complications after limb amputation:

Generally complications are not developed in an aseptic surgery. But some complications may be happened if any undesirable thing (e.g., suture tension, dead space etc.) happened during surgery. Mismanagement during post-operative care is another cause. Common complications (O’Hagan, 2006; Hymavathi *et al.*, 2014 and Raske *et al.*, 2015) are listed below:

1. Inflammation and wound infection
2. Pus formation
3. Necrosis
4. Skin ulceration
5. Gangrene
6. Acute Myocarditis
7. Seroma/Water accumulation
8. Chronic intermittent pain, chronic lameness etc.

Materials and Methods

1. Case history:

On 15th June, 2021 a cat was brought to Teaching and Training Pet Hospital and Research Center (TTPHRC) during our internship placement. From the owner we came to know that the cat was fallen from 5th floor. After that the cat was showing abnormal gait and posture.

2. Observation and diagnosis:

General physical examination:

In that time, increased temperature (104° F) and high respiratory rate was recorded from the cat. During palpation at the left tibial region, the cat was expressing signs of pain and this area was also hot and swelled. Then the cat was sent to x-ray for confirmatory diagnosis.

X-ray:

After taking x-ray at latero-medial view (L/M), a complete fracture at the distal part of tibial bone was diagnosed from the cat.

3. Pre-operative care:

The surgery was performed after one day. By that time, the animal was treated with dexamethasone (Steroidal anti-inflammatory drug; SAID). The owner was suggested to keep the patient under rest and observation until surgery.

4. Surgery:

4.1 Preparation for the surgery:

At first, the cat was sedated with xylazine at the dose of 2 mg per kg body weight through intramuscular route (Clarke and Trim, 2013). After sedation, the incision site was sprayed with povidone-iodine and shaved with blade. Following that, the shaved part was sprayed and rubbed with povidon-iodine (Curtis *et al.*, 2013).

4.2 Anaesthesia:

General anaesthesia was done by administration of ketamine with intravenous saline (Clarke and Trim, 2013). In whole surgery normal saline was administered continuously through intravenous route. During surgery maintenance dose of ketamine (every time, half of its previous dose) was given several times based on patient condition (Table-2).

4.3 Operation procedure:

The amputation of the injured limb was done by dislocating the bone from hock joint. At first, round incision of skin was performed just under the hock joint. Then gradual cutting of subcutaneous fat and muscle was done. After that, most important part came and that was ligation and cutting of different blood vessels while dislocating tibia from femur. Then after complete

dislocation of the limb, the area was restored sequentially by suturing (Table-3) the muscles, subcutaneous tissue and skin (Johnson and Dunning, 2005).

5. Post-operative care:

After completing Surgery, the patient was treated with antibiotic, antihistaminic, pain killer (Non-steroidal anti-inflammatory drug; NSAID) and antiseptic ointment. Elizabethan collar was applied to avoid licking (Gangwar *et al.*, 2020).

Table-2: Drugs used in this study

Drug groups	Generic Name	Generic Dose (mg/kg) BW	Trade Name	Route	Duration (Days)
1. Antibiotic	Ceftriaxone	20	Inj. Triject Vet	IM	7
2. Antihistsaminic	Pheneramine Maleate	2	Inj. Hista vet	IM	7
3. NSAID	Meloxicam	0.5	Inj. Mel Vet	SC	3
4. SAID	Dexamethasone	0.02	Inj. Dexa Vet	IM	1
5. Antiseptic	Povidone Iodine	-	Oint. Viodin	Topical	7
6. Sedative	Xylazine	2	Inj. Xylazine	IM	-
7. Anaesthetic	Ketamine	8	Inj. G-Ketamine	IV	-
8. Fluid Therapy	0.9 % NaCl	20	Inj. NS	IV	-

Table-3: Suture patterns and suture materials

Tissues	Suture names	Suture materials
1. Muscle Layers	Ford Interlocking	Catgut
2. Subcutaneous Tissue	Subcutaneous	Catgut
3. Skin	Vertical Mattress	Nylon
4. Blood Vessels	Ligation	Catgut

Figures



Fig 1: Operation theatre

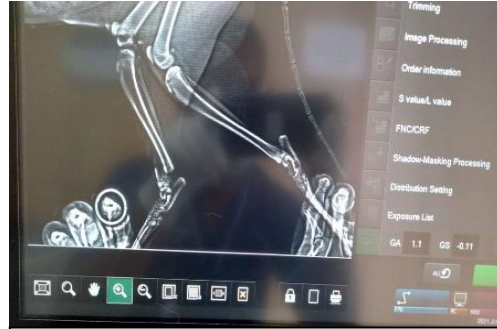


Fig 2: Fracture at tibia (L/M view)

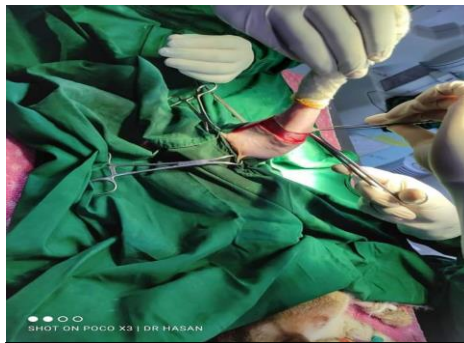


Fig 3: Incision in skin



Fig 4: Incision in muscle



Fig 5: Ligation of blood vessels



Fig 6: Suturing in muscle



Fig 8: Post-surgery



Fig 9: Current condition

Result

During post-operative care the cat was good. After one week from the end of treatment a complication of water accumulation was occurred. The owner immediately came to the hospital. The fluid was drained out and the owner was suggested to wash the area regularly with povidone-iodine by surgeons. Following the suggestions of the surgeons and after a regular dressing of that area for one week, the cat was able to get rid of that situation. Finally, the cat is completely okay and adapted with three legs.

Discussion

Trauma, limb fracture, hard palate fractures, dental fractures are common result of high rise (Whitney and Mehlhaff, 1987). Usually pet owners bring the injured animal to hospital for correction and treatment purpose. Sometimes, veterinarians need to go through surgery to alleviate the state.

As veterinarian, surgeons have to follow some general principles of surgery like gentle handling of tissues, aseptic surgery, anatomical dissection, controlling haemorrhage, 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 several times 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 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 (Foster *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.

In this case report, a complication of seroma (accumulation of water) occurred during post-operative care which is somewhat different than the above studies. After those surgery which are extensive or involved with significant tissue disruption (e.g., hernia, amputation etc.) a complication of seroma may occur (Hymavathi *et al.*, 2014). This is a collection of sterile fluid which can be corrected by draining out of that fluid and regular dressing.

Conclusion

Amputation for surgical approach is now common for correction of diseased or deformed condition. This report has a satisfactory outcome after successful surgery and following post-operative care and management according to the suggestions of the veterinarians. Though science has enough advanced for the correction of fracture, pet owners should pay proper attention to take care of their animals as 'prevention is better than cure'.

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Biography

I am Tanvir Ahmed Akash an intern student at Chattogram Veterinary and Animal Sciences University from Rangpur (Upazilla: Badarganj). I have completed my SSC and HSC in 2013 and 2015 respectively. As an future veterinarian after completing DVM I would like to be a practitioner in my rest period of life.

