



## SURGICAL MANAGEMENT OF AMPUTATION OF PES REGION IN COW AFFECTED WITH CHRONIC OSTEOMYELITIS

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### ABSTRACT

A eight years old cow weighing 350 kg was presented with the complaint of multiple fracture of left metatarsal bone below hock joint. Further, physical and clinical examinations revealed that it was a case of chronic osteomyelitis. As the fracture was unstable following multiple surgical stabilization procedures, the amputation of the pes region of the affected limb was recommended.

**KEY WORDS:** Amputation, cow, osteomyelitis, pes region,

### INTRODUCTION

Chronic osteomyelitis is a disease that requires fastidious treatment to eliminate. However, when eradication is unable to be achieved through exhaustive modalities of antibiotic therapy and multiple debridements, significant resection of the infected bone and soft tissue must be considered, including amputation (Moralle *et al.*, 2016). Osteomyelitis is an infection of bone tissue that may occur due to bacteremia, spread of local infection, or open fractures brought on by traumatic injury (Canale and Campbell, 1998). Inflammation and infection of the medullary cavity, cortex, and periosteum of bone are most frequently associated with bacteria such as *Staphylococcus* spp, *Streptococcus* spp, *Escherichia coli*, *Proteus* spp, *Pasteurella* spp, *Pseudomonas* spp, and *Brucella canis*. Anaerobic bacteria are less frequently isolated and may be part of a polymicrobial infection. Fungal diseases are based on geographic distributions and include *Coccidioides immitis*, *Blastomyces dermatitidis*, *Histoplasma capsulatum*, *Cryptococcus neoformans*, and *Aspergillus* spp. Factors contributing to infection include ischemia, trauma, focal inflammation, bone necrosis, and hematogenous spread (Marek Veterinary Manual, 2017).

### Case History and Observations

A eight years old cow weighing 350 kg was presented with the complaint of multiple fracture of left metatarsal bone below hock joint. Physical examination revealed that metatarsal bone of the cow was fully exposed outside, tendons and muscles severed and there was only a piece of skin and muscle attached (Fig. 1). The cow was partially off fed with fever (103.6<sup>0</sup>F). So, the case was diagnosed to be

the condition of osteomyelitis. Many serious injuries to the limbs causing severe bone and soft tissue damage will heal when treated wisely with current techniques. A fracture that is unstable following multiple surgical stabilization procedures may require amputation and so, the amputation of the pes region of the affected limb was recommended (Satyanarayana and Mallika, 2009).

### Clinical signs

Clinical signs may be acute or chronic and can vary widely. Acute disease in small animals presents as a sudden onset 'systemic illness with pyrexia, lethargy, limb pain, and local signs of acute inflammation (heat, swelling, pain, redness, loss of function). Animals may have lameness, pain, abscessation at the wound site, fever, anorexia, and depression. Radiography can reveal bone lysis, sequestration, irregular periosteal reaction, loosening of implants, and fistulous tracts. Deep fine-needle aspiration, cytology, and blood cultures may also reveal evidence of infection (Marek Veterinary Manual, 2017).

### TREATMENT AND DISCUSSION

Prior to the amputation procedure, antibiotic Dicrystacine S 5gm and Melonex 20 ml. were given for two consecutive days. 10 ml of 2% lignocaine hydrochloride solution was injected into the cranial epidural space (between the sacrum and first coccygeal vertebra) to produce epidural analgesia in both the hind legs. The cow was contained in lateral recumbency on the operation table with the affected leg downward for few minutes and then the affected leg was kept upward during the whole operation. The operative area (left pes region) was prepared by shaving the hairs followed

by washing the area with soap and water and the skin was allowed to dry. 70% alcohol was applied on the site of operation following by Tincture iodine painting. A tourniquet was applied on the leg above the site of incision (just above the hock joint) to reduce blood loss during surgery. Further, 5 ml of 2% lignocaine hydrochloride solution was injected locally at the site of operation. A slow intra- venous drip of normal saline was provided to the cow during the time of operation (Jayakrushna *et al.*, 2011). Two elliptical or V-shaped incisions were made through the skin 4 cm below the hock joint on both medial and lateral aspects of the leg at the point of amputation to get sufficient skin for suture. After resecting the skin, the arteries and veins were ligated using chromic catgut no. 1 to prevent bleeding. The skin incisions were continued through the extensor and flexor muscle tissues. The affected part was cut below the distal row of tarsal bones by a sterilized saw. Then the ends of the muscle bundles were anastomosed by simple continuous suture using chromic catgut no. 2 with the limb in extended condition after giving the antibiotic Dicrystacine S in powder form. The edges of skin were brought in apposition and sutured continuously with horizontal mattress sutures using nylon extra coarse. Povidone Iodine was applied on the incision line. The sutured area was covered by gauze (Fig. 2). The animal was treated intramuscularly with antibiotic Dicrystacine S 5gm for 5 days. An analgesic, Meloxicam a total dose of 30ml/day was also given intravenously for 3 days. Daily dressing with 5% povidone iodine was done until complete healing. The sutures were removed after 10 days. The recovery after amputation was also satisfactory within a month.

Amputation of a limb was indicated when lower part of a limb was affected with the conditions like necrosis, gangrene, extensive nerve injury of the limb, malignant

neoplasm, frost bite and some incurable vascular diseases that would not respond to local treatment (Frank, 2002). Amputation is the removal of a body part through a bone, where as disarticulation was a removal of a part through a joint (Murdoch and Wilson, 1996). The amputation of a limb may be necessary because of severe trauma, ischaemic necrosis, intractable orthopaedic infection, severe disability caused by unmanageable arthritis, paralysis, congenital deformity, or neoplasia (Simons *et al.*, 2014). Partial foot amputation was found to be helpful in the management of malignant tumors of canine foot (Julius *et al.*, 2005). Before going for the surgery it is essential to be certain that the animal's general condition can tolerate such a traumatic procedure. Stone (1985) also stated that when an amputation appeared to be necessary, the condition of the individual animal, its suitability for the operation and its ability to adapt after surgery, together with the owner's view of the animal's disability must be considered.

Chronic osteomyelitis, in contrast to acute forms of osteomyelitis, generally responds worse to antibiotic and surgical intervention (Canale and Campbell, 1998). Infections can last for years and are extremely difficult to eradicate, particularly when other significant medical histories are present. Serious complications inhibit the body's ability to combat soft tissue infections and allow for opportunistic infectious agents to quickly spread to neighboring bone tissue (Meffert *et al.*, 2000, Lew and Waldvogel, 1997 and Browner, 2009). The most common cause of chronic osteomyelitis infection is open fracture (Lipsky *et al.*, 1990). Unfortunately, after these extensive surgical and medical interventions, the patient's chronic osteomyelitis was unable to be eradicated and plans were made for an amputation.



**FIGURE 1:** Photograph showing chronic osteomyelitis of left pes region of a cow (Arrow)



**FIGURE 2:** Photograph showing successful amputation of the left pes region of a cow affected by chronic osteomyelitis (Arrow)

**CONCLUSION**

Chronic osteomyelitis is a disease that requires fastidious treatment to eliminate. The present case deals with the chronic osteomyelitis of pes region of a old cow and the successful amputation of the affected part.

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