

## Case Study

# Gangrenous Leg in Dog and Its Surgical Management: Case Study

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### Abstract

Because of a lack of blood supply, gangrene is a condition where bodily tissues die or deteriorate. The destruction of good tissue that results from this may cause pain and discomfort. Gangrene considered to be a serious, life-threatening emergency that requires immediate attention.

### Introduction

Gangrene is the localised death of soft tissue in animals brought on by a sustained interruption of the blood flow, which can happen as a consequence of an infection or an injury. Number of the genus *Clostridium* are well-known in both human and veterinary medicine for their capacity to spread illness by way of the production of potent exotoxins. Among these ailments, gas gangrene is an extremely histotoxic disease that affects many animal species globally. Although gas gangrene has been reported in other domestic mammals, such as goats, pigs, dogs, and cats, it is most commonly seen in sheep, cattle, and horses.

### Case history and observation

A 3-4 yr old Siberian Husky dog was presented at District Veterinary Polyclinic Bhandara. Dog was met with an accident before 1 month as stated by owner of dog and distal part of left hind limb was severely injured. After accident, owner didn't take proper care of wounds, hence due to untreated wound leg became gangrenous. On physical examination leg was found to be of blackish colored, and dry. Necrosis occurred due to ischemia necrosed area was dry, cold to touch, shriveled and appears mummified as a result of dehydration.



Fig : Gangrenous Leg before amputation

On taking temperature it was 103<sup>0</sup> F, Heart rate and pulse found to be in normal range. On the basis of history and observation leg was confirmed to be gangrenous and it was spreading rapidly to upper part of limbs.

### Causes

The primary cause of both wet and dry gangrene is inadequate local blood supply to any tissue. The absence of blood supplies deprives tissues of oxygen, which results in cell death. The following are the main causes of tissue blood supply loss and gangrene risk factors:

- Bacterial infections: *clostridium* spp.
- Trauma
- Poor wound healing
- Drenching, volvulus, intussusceptions, torsion

### Pathology

Wet gangrene can develop when both the venous and arterial blood flows are restricted, albeit it commonly results from a venous blood flow obstruction. Blood accumulates in the damaged location, creating an ideal habitat for putrefactive bacteria to develop quickly. The necrosis is exacerbated as a result of the infection's rapid spread to the surrounding tissue. Additionally, the bacteria's toxins can enter the bloodstream and cause systemic symptoms including a high temperature (Sastry, 2007).





Fig 2 Leg after amputation

The gangrenous area seems to be dark, decomposing, and has a squishy, pulpy appearance. The haemoglobin released from the hemolyzed red blood cells is what gives the substance its dark colour. Additionally, bacteria make hydrogen disulfide, which when combined with the released haemoglobin produces black iron sulphide.

### **Treatment and post-operative care**

Whether gangrene is dry or moist, the degree of tissue damage, and the underlying aetiology all affect the treatment strategy. Wet gangrene requires prompt medical attention, while some cases of dry gangrene also call for quick action. Typical treatment includes:

- Surgery
- Medical treatment
- Supportive care / post-operative care

In this case, with the consent of owner and under the supervision of livestock development officer, amputation has been performed on the gangrenous leg (distal part of left hind limb). For the amputation of dead tissue, equal flap method was used

### **Pre-surgical management**

1. Removing the dead tissue
2. Dead tissue can be removed by Amputation of affected part (Dead tissue)

### **Surgical procedure:**

1. For amputation of leg, general anaesthesia i.e. xylazine hydrochloride + Butorphanol in combination with ratio of 1:1
2. Atropine sulphate was used as preanaesthetics
3. Area around necrosed part of leg shaved properly
4. Then lignocaine was used as local anesthetics to reduce pain during excision of necrosed part of left hind limb.
5. An operation known as a closed or flap amputation involves the preservation of one or two flaps of cutaneous and muscular tissue in order to fashion a protective covering over the bone's end after amputation.

6. Before amputation of distal part of left hind limb blood vessels have been blocked / tied by catgut to prevent excessive blood loss during amputation.
7. Just above the gangrenous part of hind limb [healthy part] was incised by using scalpel/ surgical blade
8. Gangrenous part of left hind limb was amputated by using bone cutter
9. Then equal flaps of thick muscles were used to cover then cut portion of the bone
10. Then edges of skin sutured with horizontal mattress stitches

**Post-operative care** Cefotaxim, an antibiotic, was administered to the animal at a dose of 0.5 mg/kg, along with meloxicam, an anti-inflammatory drug, at a dose of 0.2 mg/kg, for a period of five days. In order to stop any additional infection, the wound was also covered with bandages for five days.

### **References**

Sastry, G. A. 2007. Veterinary Pathology. CBS Publishes and Distributors, New Delhi, India. Pp. 41-43.