

## Case Study

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

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### Abstract

Gangrene refers to dead or dying body tissue due to inadequate blood supply. Simply stated, gangrene kills healthy tissues, thus causing 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 common cause of either wet or dry gangrene is loss of an effective local blood supply to any tissue. Loss of the blood supply means tissues are deprived of oxygen, thus causing the cells in the tissue to die. The most common causes of tissue blood supply loss and major risk factors for gangrene are:

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

### Pathology

Wet gangrene develops more often from the venous blood blockage and also occurs if there is both venous and arterial blood blockage. Affected part is stuffed with blood which favors rapid growth of putrefactive bacteria. Infection spreads rapidly into the variable tissue adjacent to necrosis. Even the toxic products formed by the bacteria are absorbed in the circulation causing systemic manifestations like high fever (Sastry, 2007)





Fig 2 Leg after amputation

The affected part is black, rotten, and soft and pulpy. The affected part is dark black colour due to release of haemoglobin from the haemolysed RBC's. This is again acted upon by the hydrogen disulfide produced by bacteria which results in the formation of black iron sulphide.

### Treatment and post-operative care

Treatment of gangrene depends upon the type of gangrene (dry vs. wet), the subtype of wet gangrene, and how much tissue is compromised by the gangrene. Immediate treatment is needed in all cases of wet gangrene and in some cases of dry gangrene. Treatment for all cases of gangrene usually involves:

- 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. Closed /flap amputation: An amputation in which one or two flaps of muscular and cutaneous tissue are retained to form 'cover' over the end of bone.

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 @ 0.5 mg/kg and meloxicam @ 0.2 mg/kg was used as antibiotics and anti-inflammatory response for 5 days. Dressing for 5 days to prevent further infection

### References

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

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