
MANAGEMENT OF SUPERFICIAL WOUNDS IN A CAPTIVE ASIAN ELEPHANT WITH BISMUTH IODOFORM PARAFFIN PASTE AND ZINC OXIDE OINTMENT

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ABSTRACT

Superficial skin wounds are very common in captive Asian elephants which continues to be a challenge for practicing veterinarians, as it is difficult to manage these wounds. A variety of reasons are attributed to the development of wounds in elephants including those associated with chains, mahout induced, self-inflicted trauma and various types of trauma during accidents. The use of bismuth iodoform paraffin paste (BIPP) and zinc oxide ointment in the management of multiple wounds and wound mapping to assess the progress of healing are described.

Keywords: Asian elephant, BIPP, Superficial wound, Zinc oxide, Wound mapping

INTRODUCTION

The elephants reared in captivity for

public performances in Kerala are usually controlled and managed using metallic hobbles, chains and associated equipments. Such harnessing measures make the pachyderms highly prone to superficial open and closed traumatic wounds. Besides, they encounter several other traumatic injuries resulting in a variety of superficial and deep wounds. The skin of Asian elephant (*Elephas maximus*) is very thick measuring about 2.5-5.0 cm (Sukklad *et al.*, 2006) with loosely attached fascia leading to reduced circulation peripherally and also lacks sebaceous glands. These anatomical factors may interfere with normal wound healing in elephants (Sukumar, 2003). In wild, they are capacitated to make use of mud and slush to cover skin for the retention of moisture and protection from sun light. In general, various types of wounds may occur in all parts of the body in elephants and may become chronic or

ulcerated, if not attended on time (Courtois *et al.*, 2003). Latent period of ulceration may vary from weeks to months (Schmidt, 1986). Tuskers in captivity has to undergo prolonged chaining and associated control during the entire period of musth leading to various types of wounds induced by chain and other restraining devices used in limbs and self-inflicted injuries by the animal as part of their behavioral changes during musth. The epidermis, dermis and adjacent superficial keratinized stratified layers of the skin, may undergo erosion and exfoliation exposing the deeper layers of the skin, resulting in a wound. This type of wounds always remains as a challenge for the owner, mahout and veterinarian as it is difficult to approach and give proper care to the wound as the animal is in musth.

CASE HISTORY AND OBSERVATIONS

A 37-year-old captive Asian male elephant was reported to have multiple chain wounds which developed on the hind limbs during the musth period. At the time of examination, the elephant was in post musth period and mahouts were advised to release the elephant from restraints. Physical examination of the wound revealed multiple large sized irregular superficial wounds on the lateral palmar aspect of the fetlock joints of both hind limbs (Fig.1).

TREATMENT AND DISCUSSION

As the wounds were contaminated with mud and bedding materials, the wounds were cleansed by normal saline lavage. Detailed examination revealed involvement of epidermis and dermis and pus discharge from the wound. The outline of the wounds was mapped using a marker and polythene sheet placed over the wounds to assess the progression of wound healing. The wounds were then thoroughly lavaged with hydrogen peroxide solution (3 per cent) to remove the pus and other necrotic tissues. Potassium permanganate solution (1 in 1000) was also used to clean the wound edges. The whole wound was then painted with Tincture iodine solution. A gauze seaton was dipped in tincture iodine solution and kept over the wound bed to increase the contact time of the medicine.

From day 6, the healthy granulation tissue started appearing with complete reduction of the necrotic tissue and pus discharge. Bismuth iodoform paraffin paste (BIPP) was advised for topical use in the wounds till a healthy granulation bed appeared. The treatment with BIPP was continued for one month and the tissue bed became organized and healthy, with complete healing of dermis and epidermis (Fig. 2-5) The treatment protocol was changed and Zinc oxide cream (Zinc



Fig. 1. Wound on the hind limb



Fig. 2. Day 21



Fig. 3. Day 50

oxide powder 10 per cent w/w and white soft paraffin 90 per cent w/w.) was advised to promote epithelialization and keratinization. On day 150, there was considerable reduction on size of the wound margins and there was complete healing of the wound with complete epithelialization



Fig. 4. Day 90



Fig. 5. Day 120

leaving only a scar at the wound site.

Wound mapping, a procedure for pictorial representation of the wound is represented in Fig. 6. It was manually done by tracing the outline of the wound margin on to a transparent acetate sheets and the surface area estimated. In wounds that are approximately circular, the longest diameter in one plane was multiplied by the longest diameter in the plane at right angles; in irregularly shaped wounds, add up the number of squares contained within

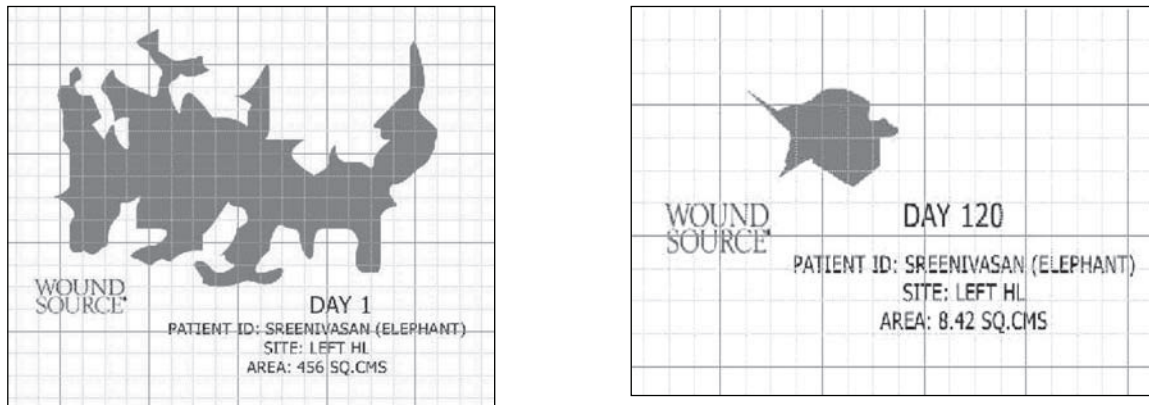


Fig. 6. Wound mapping (Day 1, 120)

the margin of the outline of the wound from an acetate grid tracing. Finally, the area calculated in the final mapping is compared with the value obtained in the first mapping. These methods are the simplest, but it should be recognised that they are not precise. However, they do provide a means by which progress over time to wound closure can be identified. Patient positioning, body curvature, or tapering of the limbs will affect the accuracy of these techniques. Wound mapping which can be done either manually or with software is a valuable tool to assess the progress of wound healing.

Bismuth iodofom paraffin paste is an agent used since ages in medical practice for suppurating wounds of superficial character (Morrison, 1916). Composition of BIPP is iodoform BP 40 per cent w/w and bismuth subnitrate BP 20 per cent w/w, white soft paraffin 40 per cent w/w. A paste is available presented in a labelled aluminium

laminated pouch. Hypersensitivity to iodine can result in an erythematous rash which usually subsides on cessation of the application.

SUMMARY

In the present study as there was reduction in the wound surface area and complete epithelialization with application of BIPP and Zinc oxide cream, it can be concluded that this combination is effective in managing the superficial skin wounds in elephants. This can also be recommended for many of the superficial skin wounds of elephants keeping in mind the stage of wound healing, nature of wound and the other environmental factors.

Ethics statement: This study does not involve animal experimentation and was conducted on cases reported in the hospitals, following standard operating protocols of animal handling and sample examination, upon informed consent of owners.

REFERENCES

- Fowler, M.E and Mikota, S. 2006. *Medicine and Surgery of elephants*. (1st Ed.). Blackwell Publishers, USA, 565p.
- Courtois, O.F., Lecu, A., Yates, R.A and Spelman, L.H. 2003. Treatment of a sole abscess in an Asian elephant (*Elephas maximus*) using regional digital intravenous perfusion. *J. Zoo Wildlife Med.* **34**: 292-295.
- Morrison R. 1916. The treatment of infected suppurating war wounds. *Lancet*, **ii**:268-272.
- Schmidt, M. 1986. In: Murray and Fowler (ed), *Elephants in Zoo and wild Animal Medicine*. (2nd Ed), WB Saunders Company, Philadelphia, 908p.
- Sukklad, S., Sommanustweechai, A. and Pattanarangsarn. 2006. A retrospective study of elephant wound, wound management from Thai veterinarians. In: *Proceedings of AZWMP*. October 26-29, Bangkok, Thailand, 16p.
- Sukumar, R. 2003. *The Living Elephants: Evolutionary Ecology, Behavior, and Conservation*. (1st Ed.), Oxford University Press, USA, 149p.
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