

Surgical management of hump laceration by partial hump reduction in a *Bos indicus* bull: A case report

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Abstract

A non-descriptive bull was presented to the RVP, ICAR–IVRI, with a deep lacerated wound on the hump due to a cut by a metal sheet on the same day. On clinical examination, the wound was deep, contaminated and with the evidence of severe bleeding. Wound edges were separated apart due to severely inflamed soft tissues of hump. Partial hump reduction and debridement were performed to facilitate easy wound closure. Postoperatively animal received antibiotics, analgesics, and daily wound management. Animal recovered uneventfully. This is the first report of partial hump reduction in a cattle bull.

Keywords: Bull, Deep wound, Hump, Partial hump reduction

Highlights

- The hump is not a vital anatomical or a physiological structure for survival, which can be reduced partially based on the need.
- Ultimate aim of any wound management is to facilitate wound healing and to reduce the risk of infection/sepsis.
- Early wound care is essential for the successful outcome.

A wound is described as a break in the skin, mucous membrane or tissue surface by physical, chemical or biological factors (Singh & Singh, 2006). Most of the time, bovines are allowed to graze in the field that makes them susceptible to wire cuts, kicks, horn - inflicted injuries, dog bites, or vehicular accidents (Tyagi & Singh, 1993). Reported incidence of wound in bovines includes 32.65% out of 196 cases of bovines under inclusion (Mishra & Kumar, 2022) and 60.8% out of 517 cattle under inclusion (Arju et al., 2014). Lacerated wounds are characterized by irregular and torn edges (Venugopalan, 2000). The main objective of wound management is the early restoration of the normal functions of the animals (Theoret, 2009). Delay in proper wound management may result in the deep soft tissue infection and septicaemia (Shearer et al., 2013). This case reports the first, partial hump reduction to facilitate wound closure in a bull with deep lacerated wound on the hump.

A non-descriptive bull was presented to the Referral Veterinary Polyclinic ICAR - Indian Veterinary Research Institute with the history of an extensive lacerated wound on the hump due to a cut by a metal sheet on the same day (Fig. 1). On clinical examination,

all vital parameters were within normal range and a contaminated, deep lacerated wound was noticed



Fig. 1. Deep lacerated wound on the cranial aspect of the hump

approximately half of the circumference of the cranial aspect of the hump. The irregular wound edges were separated 40 cm apart with the evidence of severe bleeding. The findings highlighted the severity of the

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injury, necessitating immediate surgical intervention.

A standing K - stun was given by a combination of ketamine - 20 mg, xylazine -10 mg and butorphanol-5 mg intravenously. The wound edges were infiltrated with 2% lignocaine hydrochloride to provide effective local anaesthesia. The wound was thoroughly lavaged by normal saline to remove debris and clotted blood. To ensure optimal wound closure, a partial hump reduction was performed (Fig. 2). After wound debridement, subcutaneous sutures were placed using No-1 polyglactin 910 and the skin was sutured with No-2



Fig. 2. Partial hump reduction to facilitate optimal apposition

polyamide in a cross-mattress pattern (Fig. 3 & 4). Postoperatively, the animal received antibiotics and analgesics for 7 days and 5 days respectively along with daily wound dressing. Sutures were removed on the 15th postoperative day, after complete wound healing.

Wounds are one of the commonly reported surgical affection in bovines. The well developed dorsal hump, located above the thoracic cage of males is mainly composed of the cervical and thoracic part of the rhomboideus muscle and thoracic fascia. The evolutionary relevance of the hump remains ambiguous, leading to the development of many hypotheses which are supported only by anecdotal evidence. Such hypotheses include, hump is used as a storage organ of fat in the form of fat marbling between muscle fibres and it stabilizes the scapula which will enhance their performance (Utsunomiya et al., 2019). The hump is not a vital anatomical structure for the survival of the bulls. Langer's lines or tension lines in the skin are formed by the orientation of dermal collagen fibres (Kwak et al., 2014). Closing the skin



Fig. 3. Cranio caudal view after wound closure



Fig. 4. Lateral view after wound closure

incisions parallel to the Langer's lines will pose minimal tension on sutures (Fowler, 2005). Reported orientation of collagen fibre in the calf skin, parallel to the vertebral column (Osaki, 1999) indicates the Langer's lines possibly parallel to the spinal column in bulls. In the current scenario, wound on the hump is perpendicular to Langer's line that is in alignment with the spinal column and soft tissues were severely inflamed which increases the mechanical pull on the skin edges. Converting, this wound parallel to the Langer's line is near impossible due to the extensive nature of the wound with severely inflamed, edematous soft tissues. In addition to this, dorsal hump in zebu cattle is not playing any vital role in the survival of the animal. Therefore, we employed partial hump reduction to avoid excessive tension on the skin edges that would result from direct skin apposition by sutures. Local soft tissue volume reduction by partial hump removal will prevent the excessive tension across wound edges, avoid wound dehiscence and facilitates healing by reducing mechanical stress-induced ischemia at the wound edges.

Therefore, local soft tissue redistribution or reduction can be used as a potential tool as a skin tension redistribution technique along with the available techniques. Although wounds or affections of the dorsal hump are rarely reported in bulls, hump reduction can also be performed as per the need of the condition.

Conflict of interest: The authors declare that there is no conflict of interest related to the publication of this

case report. No financial or personal relationships existed that could have inappropriately influenced or biased the content of this manuscript.

Author's contribution: YJ, KK, BPS: Performed the surgery; CP, YJ: Writing - original draft preparation; BV, JK: Writing - review and editing.

Data availability statement: No datasets were generated or analyzed during the current study. This article reports a single clinical case, and all relevant information is included within the manuscript.

Ethical statement: This case report describes a clinical case presented for treatment. All procedures were conducted as part of routine veterinary care, and informed consent for the surgical intervention and use of clinical data for publication was obtained from the animal's owner.

Use of artificial intelligence tools: During the preparation of this work, the authors used chatGPT to check the spelling mistakes in the prepared manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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