

SURGICAL INTERVENTION AND MANAGEMENT OF HORN CONDITIONS IN CATTLE

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SUMMARY

Horn amputation is done as a preventive/therapeutic procedure in cattle. The therapeutic conditions that need amputation of horn are horn fractures, septic horn, and squamous cell carcinoma. The aim of this case report is to describe and document the surgical techniques of unilateral horn amputation and its outcome in three cattle. All the procedures were done under xylazine-ketamine sedation and cornual nerve block in lateral recumbency. Two cases of horn fracture involving cornual process of right and left side along with one case of septic horn was included in the present study. The septic horn case was treated with multiple drugs by local veterinarians but the case didn't respond to treatment until horn amputation was done.

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Horn base fractures are the most common fractures encountered in the horn of cattle (Patil *et al.*, 2017). Incomplete fracture of horn is treated by immobilization with plaster cast and wiring (Sama *et al.*, 2016), whereas, complete horn fracture of horn base is treated by horn amputation. Disbudding can be beneficial in aspects like prevention of injuries inflicted by horn, more housing space, easy to transport, for treating self-inflicted horn injuries and as a treatment for several horn affections (Alvarez *et al.*, 2015; El-hawari *et al.*, 2015; Prasad *et al.*, 2016 and Mulatu *et al.*, 2021).

Case I: A five year old Kangayam breed of bullock that was brought to Veterinary Clinical Complex, Tirunelveli with a left horn base fracture (Fig. 1). The horn was in normal position but was loose. The incident happened after a fight with another bullock a day back. Clinical examination revealed crepitation and swelling at the horn base. There was emphysema at the base of the head, ear and the forehead on palpation. Feeding and voiding habits were normal. X-ray revealed a complete transverse fracture of the base of the left horn (Fig. 2). Initially horn bandage was applied and inj. Meloxicam @ 0.5 mg/kg b. wt. was given for one month and three days, respectively. The emphysema subsided during the second follow up after one month. Under cornualnerve block (5 ml of 2 % lignocaine) and xylazine (@ 0.1 mg/kg b.wt. intramuscularly) - ketamine(@ 2mg/kg b.wt. intramuscularly) general anaesthesia, the fractured part of the horn was excised. The skin flaps were sutured using silk no. 2. Post-operatively, Bolus Amoxirum forte was advised orally bid @ 5 mg/kg b.wt. for five days, Bolus Melonex plus® @ 1½ bolus daily for three days and BoliEcotas 2 BID for five days.

The bullock recovered uneventfully.

Case II: An one year old non-descript bull was brought with fracture at the base of the right horn and its loosening following a collision with a vehicle and hitting the horn on a nearby wall as an after impact. Amputation of the right horn was done under cornual nerve block with 2 % lignocaine, xylazine premedication and ketamine induction. Post-operatively Inj. Enrofloxacin was given @ 5 mg/kg b.wt. intramuscularly for five days and Inj. Meloxicam @ 0.5 mg/kg b.wt. intramuscularly for three days. The case recovered uneventfully in a month.

Case III: A 7 year old female Kankrej cow was brought with an incomplete fracture of horn and accumulation of purulent discharge inside the horn (Fig. 3). The case was treated locally for one month before presenting. The biopsy of the cornual diverticulum revealed pyogranuloma (Fig. 4). The sample sent for isolation and culture revealed the presence of *Proteus* species and *Bacillus* species. The ABST revealed intermediate sensitivity to ceftriaxone alone and resistant to other antibiotics. The ceftriaxone injection @ 10 mg/kg b.wt. intramuscularly by the authors didn't show any results. Hence amputation of the horn was done under cornualnerve block (7 ml of 2 % lignocaine hydrochloride) along with Inj. Xylazine (@ 0.1 mg/Kg b. wt. i/m) - Inj. Ketamine (@ 2 mg/Kg i/v) anaesthesia. Two elliptical incisions were made around the horn base, then two linear incisions were made, one from base of horn towards nuchal crest and other from base of horn towards frontal crest. Skin flaps were made by careful undermining. The horn was separated from frontal bone by using angle grinder. Bleeding was controlled by ligation of superficial temporal artery using chromic catgut no. 2 and cauterization of the stump of the horn core using potassium

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Fig. 1. Case I- Kangayam breed of cattle brought for horn amputation in right lateral recumbency showing signs of mild swelling at the left horn base



Fig. 2. Radiograph of the horn revealing the complete transverse fracture of the left horn base in the Kangayam bullock



Fig. 3. Five year old female Kankrej cow with incomplete fracture of the left horn

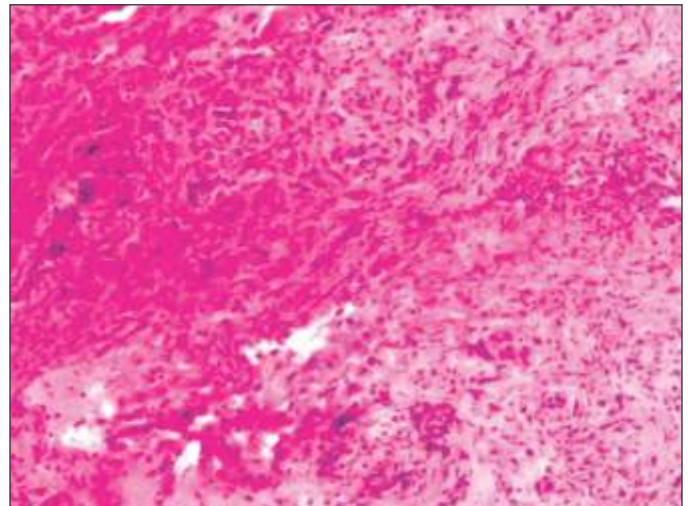


Fig. 4. The biopsy of the septic horn showing the presence of numerous neutrophils

permanganate crystals. The frontal sinus was irrigated thoroughly with normal saline. The skin flaps were trimmed to keep the stump open. Open wound healing of the stump and partial apposition of the skin around the base of the stump using silk no. 2 suture material in simple interrupted pattern was advocated, followed by bandaging with adhesive crepe bandage.

Post-operatively, daily antibiotic injections for five days and analgesic (Inj. Flunixin @ 2mg/kg b. wt. I/v) for three days. Long acting Inj. Enrofloxacin @ 7.5 mg/kg b. wt. i/m was given three times at an interval of 72 hours to which a positive response was obtained. Though Enrofloxacin was found to be resistant, long acting Inj. Enrofloxacin was found to be sensitive. The lavaging of the cornual diverticulum and the frontal sinus with 1: 1000 potassium permanganate solution and application of

topical antibiotic spray was also advised. The septic horn could be treated successfully by combined surgical management and antibiotic therapy in a time period of nine days post-operatively without any complications.

Complete fracture of the horn base was treated by horn amputation and septic horn cases by horn amputation leaving the stump open (Patil *et al.*, 2017; Dehury *et al.*, 2017). There are reports of horn base fractures due to bull fight. Majority of the animals undergoing horn amputation were restrained in lateral recumbency (Sharma *et al.*, 2021). The horn was amputated from frontal bone by using hacksaw blade, hammer and mallet by Kamalakar *et al.* (2016) whereas in our case in the heavy horn of the Kankrej cow was amputated using angle grinder at the base. The septic horn responded to drugs after providing drainage by amputation. The resistance to short acting

Enrofloxacin and sensitivity to long acting Enrofloxacin could be due to the optimized Pharmacokinetic/ pharmacodynamics ratios in long acting formulations allow them to overcome higher minimum inhibitory concentrations that short acting antibiotics might fail to reach (Gutierrez *et al.*, 2025).

Horn amputation in cattle affected by horn fracture and septic horn are discussed in this report. Non-healing horn base fractures can cause discomfort to the animals and hence, amputation may provide pain relief and ease the stress during grazing. Septic horn in massive horned breeds like Kankrej may be an early symptom of horn cancer as these light-coloured breeds are predisposed to squamous cell carcinoma of horn (Prasad *et al.*, 2016). So horn amputation can help in healing of the condition and prevent horn cancer in future.

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