

## Surgical Management of Horn Fracture in Cattle - A Report of 4 cases

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### Abstract

Four cattle were presented with horn fractures at different sites and time periods with signs of head shaking, bruxism, foul smelling purulent discharges, restlessness, off feed and rubbing horn to hard objects, etc. They were treated by modified method of horn amputation with good post operative care and management. All animals recovered uneventfully.

**Keywords:** Amputation; cattle; horn fracture; frontal sinusitis

### Introduction

Horn is the cornual process whose interior consists of irregular spaces that are actual continuation of frontal sinus of frontal bone (Singh and Kumar, 1993). Etiological factors of horn fracture include trauma, infighting, malicious attempts, etc. and may lead to frontal sinusitis and sometimes myiasis if untreated. Signs of frontal sinusitis consequent to horn fracture include restlessness, shaking of head, bruxism, reduced feed intake, foul smelling purulent or serosanguinous discharges from fractured site or nostrils, ear twitching, rubbing of affected site to hard objects, etc. (Ramarao *et al.*, 2014). Horn amputation is the best treatment option (Sreenu and Kumar, 2006). Standard and modified methods of horn amputation using different techniques have been reported in buffalo (Ramarao *et al.*, 2014). In the present paper, we report frontal sinusitis and septic horn condition consequent to horn fracture and its successful management by horn amputation in four cattle.

### History and Diagnosis

The details of all four cattle are presented in Table 1. All animals showed signs of restlessness, shaking head, bruxism, pain on palpation and reduced feed and water intake. Increased nasal discharges were observed in all animals and haemorrhages in one

cattle. Horn amputation was performed in all cases (Fig. 1-3).

### Treatment and Discussion

The animals were fasted for 12 hours and site was prepared aseptically. Standing sedation and local analgesia was achieved by Xylazine hydrochloride @ 0.02 mg/ kg b.wt. and Lignocaine hydrochloride respectively for cornual nerve block. In case no. 4, Triflupromazine hydrochloride @ 0.2 mg/ kg b.wt. intramuscularly was used as a tranquilizer as it was pregnant. All animals were given Meloxicam (Melonex<sup>a</sup>) @ 0.2 mg/kg b.wt. and Etamsylate 10 ml I/V as pre-emptive analgesic and styptic respectively. Modified method of horn amputation was followed in all cases.

Two linear incisions, one from base of horn towards nuchal crest and other from base of horn towards frontal crest were made. These two incisions were joined by curved incision on dorsal and ventral aspects at skin, horn junction and gradually raised full thickness dorsal and ventral flaps by careful undermining. The horn was separated from frontal bone by using hacksaw blade, hammer and mallet. Haemorrhages was controlled by ligation of superficial temporal artery. The frontal sinus was irrigated thoroughly with normal saline and dusted with Streptopenicillin powder. The skin flaps were sutured in horizontal mattress pattern with black braided silk no. 2 (Fig. 4). The skin sutures were protected by Tincture benzoin seal. Post-operatively administered with 2 litres inj. Ringers lactate, inj. Ceftriaxone (Intacef<sup>a</sup>) 3g, inj. B-Complex (Tribivet<sup>a</sup>) 10ml I/V, inj. Chlorpheniramine maleate (Histanil<sup>b</sup>) 15ml and inj. Tetanus toxoid 6 ml I/M. The wound

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**Table 1: Details of all four cows**

Signalment	Site of fracture	Duration of existence	Aetiology	Clinical observations
HF Cow, 7 yrs (Fig. 1)	Right horn, base	3 days	Infighting	Exposure of frontal sinus to environment with haemorrhagic nasal discharges.
Ongole bullock, 8 yrs (Fig. 2)	Right horn, lower 1/3 <sup>rd</sup>	20 days	Automobile Accident	Incomplete fracture at lower 3 <sup>rd</sup> of horn with longitudinal and transverse deep fissures with oozing pus.
Ongole bullock 6 yrs	Left horn, avulsion and fracture at lower 3 <sup>rd</sup>	5 days	Infighting	Irregular fractured edges, foul smelling discharges oozing from fracture site and maggots infestation.
Ongole cow, 10 yrs (Fig. 3)	Right horn, fracture at middle 3 <sup>rd</sup>	7 days	Malicious attempt	Incomplete fracture at anteromedial aspect of base of horn. Downwards inclination of horn.



Fig. 1: Horn fractured at base and completely exposed frontal sinus after irrigation.



Fig. 2: Horn fractured at distal third of intact horn (discharges oozing out from opening).



Fig. 3: Horn fracture at base with complete bending



Fig. 4: Case 1 after complete skin suturing

was dressed on alternate days and smeared with paste of Zinc oxide and Tincture iodine. Skin sutures were removed on 12-14<sup>th</sup> post-operative days and all animals recovered uneventfully except case no. 4, in which healing was delayed due to

negligence of owner in providing required post-operative care.

In the present cases, the horn fractures were due to trauma and infighting, which were the most common

etiological factors as mentioned by Singh and Kumar (1993). It is very rare to see the horn avulsion associated with fracture as in case no. 3 and almost all horn fracture cases leads to frontal sinusitis, as the horn was actual continuation of frontal sinus. We used combination of Xylazine hydrochloride and cornual nerve block for smooth conduction of surgery, which was also followed by Giri *et al.* (2011). Triflupromazine hydrochloride and cornual nerve block were used in case no. 4 as it was pregnant. However, the combination with Triflupromazine hydrochloride could not provide proper surgical plane of anaesthesia.

For horn amputation, flap (Giri *et al.*, 2011) method was followed. Hacksaw, hammer and chisel were used to separate horn at base. Thorough irrigation of frontal sinus with normal saline helped in removing pus, blood clots and free necrotic tissue. Dusting of frontal sinus after mopping the frontal sinus helped in combating infection. Histamine release during initial stages of wound healing might have provoked the animal to rub the site against hard objects leading to suture dehiscence in case no. 4 thus delayed wound healing. Rajendra *et al.* (2015) managed incomplete horn fractures with bamboo splints in

bullocks. Umadevi and Umakanthan (2013) used lime and jaggery paste for managing fractures and avulsion in cattle.

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#### Dr. Rishendra Verma awarded with higher doctorate



Dr. Rishendra Verma, former Joint Director, Centre for Animal Disease Research and Diagnosis (CADRAD), Gazetted Government of India Analyst and presently, ICAR-Emeritus Scientist at Indian Veterinary Research Institute (IVRI), Izatnagar was awarded Doctor of Science (D.Sc.) in Microbiology from Rani Durgavati University (RDU), Jabalpur. Dr. Verma did his research on 'Reliability of pncA gene, IS6110 and 12.7 kb fragment based PCR assays for molecular detection of *Mycobacterium tuberculosis* complex (*M. tuberculosis* and *M. bovis*) in cultured strains and clinical specimens'. The research was undertaken under the advisorship of Prof. Anjana Sharma, Professor, Department of Biological Sciences, RDU. The study confirmed unequivocally that PCR with 12.7 on DNA from fresh sputum samples or cultured mycobacteria strains discriminates successfully *M. tuberculosis* and *M. bovis*.

Dr. Verma is an expert with more than two decades of experience in Veterinary biologicals and is associated as coordinator with Indian Pharmacopeia Commission (IPC) for regular inclusion and updation of Veterinary monographs for Indian Pharmacopeia since the first edition of IP (Veterinary).