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A clinical study on diverse horn-affections in thirty-six bovines

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Abstract
Horn-affections are very common surgical affections of integumentary system of bovines. The horn encloses the corneal process of the frontal bone, except in polled breeds of exotic cattle. The interior of the horn consist of irregular spaces which are continuation of the frontal sinus. Diverse horn-affections included avulsion, fracture, septic-horn, horn-cancer and faulty-trimmed septic horn. Present study was conducted at Veterinary clinical complex, CVAS, Navania, Vallabhnagar, Udaipur (RAJUVAS-SOUTH CAMPUS) on thirty-six clinical cases of bovines. This study concluded about incidence of horn-affections at south Rajasthan, Inta-operative observations and post-operative complications associated with presented and operated cases.

Keywords: diverse horn-affections at South-Rajasthan, bovines, incidence, intra-operative-observations

Introduction
Majority of tribes of Rajasthan lives at Southern area of Rajasthan and each family rears at least 2 to 3 animals, especially large ruminants, for their sentiments as well as livelihood. In South-Rajasthan, majority of ruminant population are domesticated for milk purpose. Due to lack of scientific knowledge as well as low literacy rate this region of Rajasthan favours high occurrence of diverse surgical affections in ruminants at this particular area. Horn-affections are very common in bovines because horns are their weapons and used in defensive situations and in competitive encounters at the feed bunk, hay bale, shade tree, water trough, over breeding privileges or dominance and against man in offensive or protective situations (Hamdi *et al.*, 2013) [1].
Pre and post operative pain in animals suffering with horn affection should be attended to relieve stress on the animal as it may affect its milk production. Most of these affections do not respond to the routine medical management and demand amputation of the horn (Sreenu and Kumar, 2006) [2].
Horn affections are common in bovines because the valuation of these animals, especially buffaloes, is done based on orientation of horns besides established traits and that's why owners are not so much interested in early disbudding in India (Prasad *et al.*, 2016) [3]. Present study was conducted on diverse horn-affections in 36-Bovines reported at Veterinary Clinical Complex, CVAS, Navania.

Materials and Methods
Present study was conducted on 36-cases of bovines presented to Veterinary clinical complex, CVAS, Navania for treatment of various horn affections. Various data like overall occurence and case presentation findings of all reported cases (36 cases) and intra-operative findings and post-operative complication of all operated cases (25 cases) were recorded and evaluated. All cases were operated for horn amputation by flap-method. Post-operative care of all cases included daily antiseptic dressing of suture line for 7-12 days and intramuscular administration of Strepto-penicillin (DICRYSTICIN-S, Zydus AH) @ 2.5 to 7.5 gm. (as per body weight) and Meloxicam (ZOBID-M VET, Zydus AH) 0.3mg/kg body weight, O.D. for 7-10 days and 3-5 days, respectively. Sutures were removed after 12-15 days of surgery. Cornual nerve block and infiltration anaesthesia with 2% Lignocaine HCL was provided for surgery and the base of the horn was tested by pin prick method to assess extent of analgesia during surgery.

Results

A. Overall occurence and case-presentation findings

The various horn affections noted in study were: fractures (n=10, 27.78%); fracture with avulsion (n=6, 16.67%); septic horn (n=10, 27.78%); faulty-trimmed septic overgrown horn (n=4, 11.11%) and horn cancer (n=6, 16.67%) (See Table.1 for detailed findings). Various parameters and clinical findings like body weight, heart rate, respiration rate and body temperature of all the cases were noted immediate after their reporting at clinic and thereafter further evaluated (See Table.2). In present study the age of animals ranged from 2.5 to 20 years.

Table 1: Detailed data of cases with horn affections

Type of horn-affection	Case reported	Affected animal and Sex				Horn involved		Injury Occurrence time			Aetiology		
		Animal	No.	Sex		Rt.	Lt.	Morning	Evening	Night	Self-trauma	Fight	Unknown
Fractured horn	10	C	3	M	2	1	1	2	5	3	5	4	1
				F	1	0	1						
		B	7	M	0	6	1						
				F	7								
Fracture with Avulsion	6	C	1	M	1	0	1	1	5	0	2	2	2
		B	5	F	5	2	3						
Septic horn	10	C	6	M	4	3	1	Nil			2	4	4
				F	2	0	2						
		B	4	F	4	4	0						
Horn-cancer	6	C	5	M	4	3	1	About Paint-status of cancerous Horn			Nil		
								Painted-Cattle Horn		4			
				F	1	0	1	Non-painted		1			
		B	1	F	1	0	1	Non-painted-1					
Faulty-trimmed septic horn	4	B	4	F	4	Both horns were involved in all 4 cases		Nil			Using diverse methods by quacks or owners		

C-Cattle; B-Buffalo; M-Male; F-Female

Table 2: Various clinical parameters noted at the time of reporting

Parameter Noted	Mean ± S.E.
Temperature (in Fahrenheit)	101.11 ± 0.19
Heart-Rate (heart beat per-minute)	66.69 ±2.3
Respiration-rate (breath per-minute)	21.69 ±1.6
Body weight (in Kg)	354.05 ±19.19

B. Intraoperative findings

Out of 36 presented cases, 25 cases (11 cattle and 14 buffalo) were operated for horn amputation and various intra-operative findings like restraining, type of anaesthesia, amount of anaesthetic agent used to achieve maximum analgesia, operative time (in terms of first incision to placement of last suture), time taken in suturing (in terms of placement of first suture to last suture), pre-operative conservative management (regular antiseptic dressing of septic horns and other horn-affections having initial infection using Normal saline solution mixed with Povidine iodine or $Kmno_4$ solution (1:1000), non-adhere bandaging of open wound), bleeding status during surgery (in terms of mild, moderate, severe), status of analgesia during surgery (in terms of mild, moderate, proper) and few specific findings like out-pouching below the frontal crest observed immediate after local infiltration were noted individually in all operated cases and further evaluated (See Table.3 for detailed findings).

Table 3: Detailed intra-operative findings of all operated cases

Intra-operative findings	Data was calculated from 25 operated cases	
Restraining	Standing	6 (all were old-aged cattle)
	Lateral	19
Type of anaesthesia	Only-Local(2% Lignocaine)	22
	Local along with Sedation (Xylazine@0.05mg/kg)	3
Average amount of local anaesthesia used (in ml)		90.52 ± 5.15
Average operative-time (in minutes)		72.57 ± 3.06
Average suturing time (in minutes)		36.77 ± 1.93
Status of analgesia	Mild	2
	Moderate	15
	Proper	7
Bleeding status	Mild	11
	Moderate	7
	Severe	7
Out-pouching below the frontal crest observed immediate after local infiltration	9 (8 buffaloes and only single cattle)	
Radial Nerve paralysis immediate after surgery	2 (Both were old aged bullock; more than 15 years) However, animal recovered from such condition after 3-4 days of surgery using gentle massage of affected limb.	

C. Post-operative complications

Wound dehiscences along with sinusitis (in 2 cases, 8%) and presence of maggots at incision line in follow-up period (single case, 4%) were reported as post-operative complication (Fig.12-13).

Fig 1: Horn-fracture in buffalo

Fig 2: Horn-fracture in cattle (left-horn)

Fig 3: Septic Horn in cattle (note purulent discharge)

Fig 4: Septic Horn in Jafarabadi buffalo (note purulent discharge)

Fig 5: Horn-cancer in old-aged bullock (note tilting of right horn and painted horn)

Fig 6: Horn-cancer in old-aged bullock (note about tilting of right horn at base and both horn were painted)

Fig 7: Intra-operative photograph showing cauliflower like cancerous growth in Horn-cancer

Fig 8: Avulsion of Horn with fracture in buffalo

Fig 9: Avulsion with fracture in cattle

Fig 10: Faulty-trimmed overgrown horn in buffalo

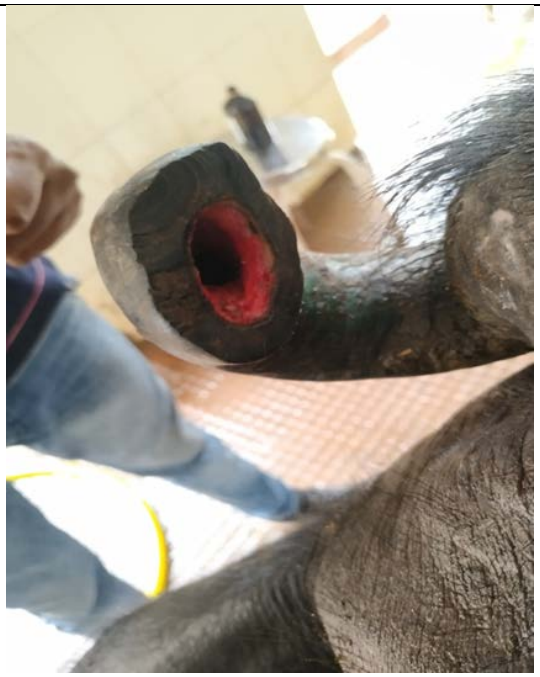

Fig 11: Inside view of faulty trimmed overgrown horn

Fig 12: Wound-dehiscence along with sinusitis in buffalo as post-operative complication

Fig 13: Presence of maggots at suture line in post-operative period in cattle

Discussion

Higher number of horn affections in bovines in south-region (Udaipur) of Rajasthan was reported because of particular geographical area, higher population of particular long horned cattle and buffalo breeds, improper rearing and management of animal, lack of scientific knowledge to owner and unavailability of door to door treatment. In present study majority of cases were operated with restraining in lateral recumbency after 18-20 hour fasting as mentioned by Singh *et al.*, (2020) [4]. Old aged bullocks were operated in their

standing position because such animals are more prone to radial nerve paralysis (Peshin *et al.*, 2020) [5]; however few cases were still reported with radial nerve paralysis immediate after surgery but the condition was found resolved in 3 to 4 days by gentle massage. Prolonged operative time may be responsible for mentioned complication in present study. In present study equal occurrence were found in fractured horn and septic horn; avulsion hornand horn cancer whereas faulty-trimmed overgrown horns were less but bilateral in all cases. The higher incidence of horn fractures were reported with observations of Shivaprakash *et al.* (2007) [6], Salgar (2008) [7] and Mistry (2009) [8] while Sreenu and Kumar (2006) [2] and Mahida*et al*. (2009) [9] reported higher incidence of horn avulsion. The higher incidence of fractures among horn affections was also reported by Rao *et al.*, (2016) [10]. Occurrence of fractures and avulsions in present study might be due to vigorous and infighting nature of bovines. Kumar and Thilagar (2000) [11] who reported a case of bilateral horn cancer in a buffalo mentioned that the incidence of horn cancer was rare in buffaloes and similarly in present study only single case of horn cancer in buffalo was reported. Sreenu and Kumar (2006) [2] treated horn fractures effectively by flap method of amputation of horn and similarly in present study only flap method was used as method of horn amputation with satisfactory results. Oheme and Prier (1974) [12] opined that trimming of horn in bovine practice was essential for its excess growth otherwise it causes pressure sore on the head as well as impaired vision. In present study, all avulsion cases were reported along with broken or fractured horn and were treated by amputation however Verma and Kumar (1999) [13] treated avulsion of horn by with an antiseptic dressing with pine tar and carbolic acid in oil soaked bandage. Umadevi and Umakanthan (2013) [14] used a mixture of lime and palm jaggery to treat avulsion of horn in farm animals. Horn cancer is generally unilateral and is encountered in cattle in the age group of 5-10years (Tyagi and Singh, 2006) [15] but in present study cases of horn cancer were reported up to 20 years of age. Many researchers (Udharwar *et al.*, 2008 and Kumar *et al.*, 2013) [16, 17] used Vincristine in post-operative period but in present study no-one case required such therapy during follow-up period. Majority of cases were recovered well but few cases showed post-operative complications.

Conclusions

Horn affections are very common in bovines and required surgical interventions. Horn amputation is very common surgical intervention for management of horn injuries in bovines. Instead of buffalo, horn-cancer is very common in cow bulls/bullocks and may show reoccurrence. Septic-horn required regular antiseptic dressing at least for a week before surgical intervention. Broken horn is very common in buffaloes. In present study it was found that early management of horn injuries/horn affections leads to minimum post-operative complication. Flap-method of horn amputation/dehorning was found satisfactory with minimum post-operative risk. After dehorning sinusitis is very common post-operative complication.

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