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Head and neck affections in bovines: A study of ten months duration in 32-clinical cases of bovines

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Abstract
Total 32- bovines affected with head and neck affections were selected and operated at veterinary clinical complex, college of veterinary and animal science, Navania, Udaipur. All cases were surgical affections and treated accordingly. Clinical and telephonic follow-up were obtained from the respective owners, recorded and evaluated. Major affections were related to horn, eye, tongue, salivary glands, trachea, pharynx, mandible fractures and oesophagus were reported and recorded. In all the cases 21-cattle and 11- buffaloes were presented with either sex. Both local and general anaesthesia (TIVA) were used according to cases presentation.

Keywords: Head & Neck, surgery, ruminants, adults, acquired

Introduction
A wide range of affections of head and region, either congenital or acquired are seen in bovines. All age group can suffer with these affections. Common problems includes, horn cancer, broken and septic horns, various types of dermoid, corneal affections, iris prolaspe, proptosis, salivary affections and choke. Structural, physiological and metabolic disturbances are associated with head and neck affections. Death is also common in many if not treated as soon as possible. Either genetic or environmental or both factors are related to such affections. Majority of such affections in large ruminants specifically demands earliest surgical management otherwise animals can collapse soon like in choke of esophagus. However, in many cases, the exact causes of diseases are unknown (Johnson *et al*., 1985; Tyagi and Singh, 1993) [7, 17]. In congenital affections of head and neck, the abnormalities (structural or functional) are usually distinguishable at birth or at when foetus leaves foetal chorion (Tiwari *et al*., 2009) [16]. In acquired affections of head and neck, horn, ocular, oesophageal (especially in buffalo) and salivary affections are commonly and routinely reported in bovines. Because of indiscriminate feeding behaviour ruminants usually suffer with choke and with hardware disease. Mandible fracture (usually bilateral and at symphysis) is mostly reported in neonatal calves because of obstetrical injuries, when forceful traction is applied to retrieve foetus during delivery. Moreover these fractures are also reported in adult bovies also especially due to trauma, actinobacillosis and concurrent with dental abscess. (Singh *et al.*, 1993) [13]. Here in present study, keeping in view, the clinical importance of surgical affections of head and neck region of bovines, the investigation was under taken.

Materials and Methods
Total 32 clinical cases of either sex, different breeds and different age group bovines were presented with different surgical affections of head and neck region of bovines. All detailed findings are mentioned in Table. 1

In this paper we have discussed only those cases where surgeries were undertaken for management of particular affection. Out of 32 cases, 56.25% horn affections (n=18/32); horn cancer (77% {n=4/18}, only in cow bulls/bullocks); (22.22%, n=4/18) broken/septic horn, 18.75% (n=6/32) ocular affections, 6.25% (2/32) salivary affections, 3.12% (n=1/32) mandibular fracture (in adult), 3.12% (n=1/32) tounge affections, 3.12% (1/32) pharyngeal affections, 6.25% (2/32) oesophageal affections and 3.12% (1/32) pharyngeo-tracheal (sharp foreign body) affections were selected and treated with surgical techniques.

Follow-up was taken upto healing of surgical wound (if, any) or when any complication is reported. However in few cases (6.25%, n=2; one case of choke in a 6-year old buffalo and one case of end stage horn cancer in a 14-year old bullock) animals were not survived might be due to poor case presentation or post-surgical issues.

Anaesthesia and Recumbency

To achieve good analgesia and to immobilize animal properly during surgical intervention, local analgesia along with sedation was given in majority of animals (34.37%; n=11/32), TIVA (total intravenous general anasthesia) was given in many animals (18.75%; n=6/32) whereas sole local analgesia is used in few animals (9.37%; n=3/32). Majority of bovines were operated in lateral recumbecy (53.12; n=17/32) with affected side towards the surgeon. Few cases were undertaken in standing condition (9.37%; n=3) due to age-related issues. Details about each case was mentioned in Table.1

Surgical procedure of different affections

a. **For horn affections:** Total 18 cases of horn affections were selected for surgical intervention (however so many cases were presented besides 18, but surgery was avoided due to diffused stage of horn cancer in old-aged bullocks). Out of 18, 77.77% (n=14/18) cases were old aged bullocks (common problem of that region because of particular geographical area), 22.22% (n=4/18) cases were aggressive buffalo females suffered with broken horn. Except three bullocks, all animals affected with horn affections were sedated with xylazine@ 0.05mg/kg and maintained in lateral recumbency having affected side towards the surgeon. While all three animals were operated in standing condition. In all animals 2%, 30-40 ml of lignocaine was infiltrated around the corneal nerve near frontal crest. After aseptically preparation, two incision were made over frontal crest and dorsally in poll region. Skin was undermined and horn was removed using wire-saw. Flap was prepared in all cases and then sutured with silk No.2. Ligature was placed in cases where moderate bleeding have been observed. Bandaging was done in standing condition in all cases immediately after surgery. Sutures were removed after 12-15-days in all cases, however in few cases suture dehiscence was reported as a postoperative complication which was further treated with antiseptic dressing and antibiotic therapy. Postoperative management includes analgesic (meloxicam@0.2mg/kg), antibiotic (DCR@ 2.5 to 5gm as total dose on the basis of body weight) and regular antiseptic dressing till the suture removal.

b. **For Salivary affections:** Total 2-cases were presented with unilateral parotid problems. Out of 2-cases, one (SG1) was parotid gland rupture near base of the left ear whereas other case (SG2) was salivary fistula at right side of gland. In SG1-case, gland was directly cauterised using routine povidone solution mixed with 5% copper sulphate. SG-2 was selected operated with parotid gland ablation. Animal was deeply sedated with local infiltration and then gland was removed using standard protocol. Postoperatively, antibiotics and analgesics were given as similar to horn affections. SG1 case was advised to keep their animal under noise free environment atleast for 7-days of procedures.

c. **Ocular problems:** Total 6-cases were reported and operated. Out of 6, 33.33% (n=2/6) cases;(one cattle and one buffalo) were presented with iris protrusion whereas rests (66.66%; n=4) were having ocular growths. For repair of iris protrusion in one case of gir cattle, animals was anaesthetized with xylazine (@0.05mg/kg) + ketamine (@1.5mg/kg) combination and then maintained with sole ketamine to effect. Affected eye (left side) was taken towards surgeon and globe position was maintained centrally with surgical threads applied temporarily at bulbar conjunctiva (Vicryl. No. 3-0).Protruded iris was resected and reposed. Cornea was sutured with (polyglactin 910 no. 4-0). Procedure was similarly repartead in second buffalo case of iris prolapse in left eye except anaesthesia was only AP-block alongwith retrobulbar infiltration. In both cases vision was not restored but eyes were corrected and achieved excellent tectonic outcomes. Rest 4-cases were managed with eye-globe evisceration following standard protocol. However reoccurrence was reported in one case due to malignancy.

d. **Choke:** Total 2 cases (both were buffaloes) were presented as an emergency with signs bloat. After clinical examination, foreign bodies were clearly palpated in both cases. Emergency oesophagotomy was performed in both cases and phytobezoars were removed. Both cases were anesthetized maintained on ketamine similar to ocular case management. Incision was given proximal to obstruction. Suturing done with catgut no.1 with Connell suture pattern. One case died in late (after 15-days) postoperative days due to septicaemia and improper postoperative care.

e. **Other affections:** one case of pharyngeal foreign body was presented and non-potential rubber made foreign body was retrieved in lateral recumbency under general anaesthesia. Another case of tracheal foreign body was similarly treated under GA. Mouth gag was used in cases of both tracheal and pharyngeal foreign bodies. Both cases recovered well within one week and were administered with corticosteroids for 3-postoperative days.one case of mandible fracture was presented and taken under GA. Fracture was easily palpated at left side of horizontal ramus. One smooth 4-mm pin was drilled directly within horizontal ramus of left side of mandible. Pin get loosened and was removed after 18-days of surgery. Animal recovered uneventfully. A case was presented with completely separated cranial portion of tongue in buffalo after around 2-hours of injury. Case was attempted and sutured with absorbable sutures (polyglactin.no.2-0) at dorsal and ventral side with good apposition of tissue. However, owner was contacted telephonically and information was taken about the case. Case has failed to achieve success within 2-days due to sepration of apposed tissue.

Table 1: Detailed findings of all cases are mentioned

Total cases (on which study have been conducted)	Species				Details of each case			Outcomes
					Particular case	Surgical affection and age of animal in years	Anaesthesia and recumbency	
32	C	M	14	21	C1	HORN CANCER(C1 to C14)	Standing condition with cornual block (C1-C3)	Recovered
					C2			Dead
					C3			Recovered
		F	7		C4		Deep sedation with xylazine and cornual block(C4 to C14)	Recovered
					C5			Recovered
					C6			Recovered
					C7			Recovered
					C8			Suture dehiscence
					C9			Maggot wound complication
					C10			Recovered
					C11			Recovered
					C12			Recovered
					C13			Recovered
					C14			Recovered
					C15	Parotid rupture	Deep sedation	Cauterized successfully
					C16	Pharyngeal FB	GA	Retrieved easily
					C17	Tracheal FB	GA	Retrieved
					C18	Lower eye lid growth	2% Lignocaine	Reoccurrence
					C19	Medial canthus growth (cauliflower)	2% Lignocaine	Reoccurrence after evisceration
					C20	Iris protrusion	GA	Tectonic outcomes
					C21	Lower eye lid growth	2% Lignocaine	Reoccurrence
	B	M	0	11	B1	BROKEN HORN (B1 to B4)	Deep sedation with local (B1-B4)	Recovered
					B2			Recovered
					B3			Suture dehisce
					B4			Sinusitis
		F	11		B5	Choke	GA	Died due to septicaemia
					B6	Choke	GA	Recovered without complication
					B7	Iris protrusion	Local	Tectonic outcomes achieved
					B8	Tongue laceration	GA	Unsuccessful
					B9	Lower eye lid growth	2% Lignocaine	Recovered
					B10	Mandible fracture	GA	Recovered
					B11	Salivary fistula	GA	Recovered

C= Cattle; B= Buffalo, M=Male, F=Female

All the cases were selected after complete clinical examination to rule out other concurrent diseases. All the cases recovered well from anaesthesia without anaesthetic mortality in TIVA. However in present study, otherwise healthy cases were selected and discussed.

Results and Discussion

A. Intraoperative hurdels

Radial nerve paralysis was reported in 2-bullocks operated for horn correction of horn affection. Gentle message was advised to owner for 2-3 days and signs of paralysis were easily resolved. One case of horn cancer died due to spread of cancer to cranial cavity. It was confirmed after post-mortem same case. Complete removal of growths was not possible because of diffused nature of tumour in affected eyes of 2-cows. Therefore reoccurrence of multiple growths (might be due to presence of squomous cell carcinoma, most common neoplasm related to eye) were reported in 2-cases of cattle affected with eye affection. In cases of salivary gland affections, severe large swelling was reported in one case just next 5-hours after procedure, where gland was cauterised with 5% copper-sulphate mixed with routine povidone solution. study. One case of choke was died due to ignorance in postoperative prescribed medicines thus suffered with severe septicaemia with high grade fever. Mouth gag is essentially required in management of phyrengeal and oesophageal affections. Here also mouth gag was used first without giving anaesthesia but both cases were results in failure. In second attempt of both cases, general anaesthesia was given and then success was achieved. Topical proparacaine is required to desensitize cornea. Neither auriculopalpebral nor retrobulbar nerve block provides analgesia to cornea, hence additional topical analgesia is required. But in this study due lack of availability additional topical analgesia was not achived therefore out of 2-cases, one case was difficult to deal during surgery due inadequate immobilization. However to consider this point in mind another case of gir cattle was undertaken in general anaesthesia. To conduct surgery on tongue, cheatle forcep is required. But in this study due lack of avialabilty of chetal forcep at the time of surgery, surgical cloths were used to hold tongue and found unsuitable. However already discussed that success in this case has not achieved.

B. Follow-up, post-operative complications and further management

After surgery owner was contacted telephonically (wherever possible) for follow-up of the cases upto 5-6 months. Sutures were removed 12-15 days after in cases where suturing done. Recorded percentage of outcomes were, 65.62%; 12.5%; 9.33%; 6.25%; 3.12% as recovered cases (n=21/32) without complications, recovered cases after complications (n=4/32), reoccurrence of diseases after surgery (n=3/32), death during recovery period (n=2/32) and failure of attempt (n=1/32) respectively. All the postoperative details are mentioned in Table 2.

Table 2: Details of postoperative complications

Post-operative complication	Percentage of occurrence	Possible reasons behind and Further management
1. Suture dehiscence	6.25%, (n=2)	Proper postoperative medication was not followed appropriately. Flushing of isotonic saline solution (0.9%) mixed with routine povidone till the formation of granulation tissue.
2. Septicaemia	3.12%, (n=1)	No medication was done as prescribed by owner results in septicaemia and death.
3. Corneal scarring	6.25%, (n=2)	Corneal scaring is very common in corneal injuries due to disruption in arrangement of collagen fibers. 1% prednisolone eye drop was prescribed for one month after FDT.
1. Sinusitis	3.12%, (n=1)	Itching and scratching to the suture line. Self trauma to head. Regular flushing was done till recovery as similar to case of suture dehiscence

Discussion

Head and neck affections are commonly encountered in bovines in veterinary practice. Most of the affections required immediate surgical correction along with medical management. If not treated timely causes severe loss in production even some death also. Economic loss due to surgical affections of head and neck is also higher in percentage. Majority of affections can be treated with good success if appropriate surgical protocols are followed. In present study, horn affections were higher in number followed by ocular, oesophageal, pharyngeal, tracheal and others. Almost similar findings were reported by many researchers previously. However such findings can vary as per particular geographic area. In present study most of the owner rears bullocks (due to requirement and interest in bullock cart) and hence larger and painted horns affected more with horn cancer. This represents particular geographical region of navania, Udaipur. Choke due to phytobezors, tongue lacerations, ocular, pharyngeal affections are very common where open housing system is followed and similarly in present study two cases of buffalo were reported with oesophageal obstruction due to phytobezaors, one case with pharyngeal FB and one case of tongue laceration. Visual outcomes in bovines affected with corneal injury and protruded eyelids are rare in veterinary practice and similarly in present study only tectonic outcomes were achieved. However many studies conducted eye-globe removal procedure for ocular injuries but in present study reposition of iris and corneal suturing was done in 2 cases of iris prolapse whereas in cases of ocular growths (where pthisis bulbi were seen with multiple growths), globes were removed through standard protocol of eye-evisceration. (Barkyoumb, and Leipold, 1984; Castro *et al*., 2006; Singh *et al*., 1993; Chawla *et al*., 1993; Tyagi and Singh, 1993; Edmondson *et al*., 1989; George EL., 1988; Jayshree and ranganath 2009; Kiyoshi *et al*., 2001; Kumar *et al*., 2016; Radostits *et al*., 2007; Sarrafzadeh, 2007; Sooryadas *et al*., 2009; Tijare *et al*., 2009; Sharma *et al*., 2022; Tiwari *et al*., 2009) [1, 2, 3, 16, 17, 13].

Conclusion

Head and Neck affections are very common in bovines and majority of them required surgical correction. Few of them (like choke) required immediate attention otherwise animal can suffer mortality. Ocular affections required proper management through standardised techniques otherwise bovines can suffer with vision loss. Surgical expertise required to correct salivary affections to prevent complications like facial nerve paralysis. Usually such affections are commonly seen in adult bovines.

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