

# SURGICAL AFFECTIONS OF MUSCULO-SKELETAL SYSTEM OF CAMELS (*Camelus dromedarius*): I- HEAD, NECK AND THORACIC REGION

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## ABSTRACT

In the present study 32 cases of musculo-skeletal affections of head, neck and thorax which were diagnosed on the basis of history and clinical examination, are reported here. These were treated on the general principle of management which included application of plaster of Paris cast using iron or wooden splint, interdental wiring using copper wire, operative procedures, wherever required and medicinal or surgico-therapeutic treatment.

The occurrence of surgical affections of musculo-skeletal system of head/ neck and thoracic region was 53.13 and 46.87% respectively. The Ca, P, Vitamin A and E values in all cases were found lower than the reference values for their parameters in camels. However, the values of CPK and ALP were found higher than the reference values for their parameters in camels.

**Key words:** Camel, musculo-skeletal system, surgical affections, surgico-therapeutic treatment

Camel is mainly used as a draught or racing animal, thus its musculo-skeletal system is subjected to varying degrees of stress forces leading to a variety of disorders of this system, including fractures. The commonest fracture is that of horizontal rami of mandible in camels followed by fractures of metatarsus and metacarpus (Gahlot and Chouhan, 1994) and the highest incidence of fracture were seen in head region followed by forelimbs and hind limbs.

Lameness is an abnormal gait or locomotion characterised by limping or not bearing full weight on a leg usually associated with pain in the musculoskeletal system (Radostits *et al*, 2000), which may be acute or chronic depending on the duration and the cause of the case. Lameness in camels is caused by a wide range of etiology which includes direct trauma, nutrition, infection, fractures, etc (Gahlot, 2007).

Many times these musculo-skeletal disorders markedly affect the production value of camel. In view of this, an investigation was undertaken to study the musculo-skeletal affection of head, neck and thoracic region of camels.

## Materials and Methods

Present study was done in the Clinics of department of Veterinary Surgery and Radiology and 65 cases of musculo-skeletal affections were diagnosed

in camels of either sex out of which 32 camels showed the affections of head, neck and thorax.

Musculo-skeletal affections recorded in present study were diagnosed on the basis of history and clinical examination. The animals were examined clinically and radiographically. A thorough clinical examination was done to diagnose the diverse musculo-skeletal affections in camels.

The diverse musculo-skeletal affections recorded in the present study were treated on the general principle of management of these affections. These animals were subjected to a variety of treatments which included application of plaster of Paris cast using iron or wooden splint, inter dental wiring using copper wire, operative procedures, wherever required and medicinal or surgico-therapeutic treatment. Appropriate regional or local anaesthesia and Xylazine hydrochloride was used for sedation @ 0.3 mg/kg body weight I/V (Sharma *et al*, 1985), as and where required.

Biochemical examination was done by aspirating out 5 ml jugular blood from each camel. Calcium, phosphorus, creatinine phosphokinase (CPK), alkaline phosphates (ALP), vitamin A and E were estimated. The calcium was determined by Clark and Collip method as described by Hawk *et al* (1954), phosphorus was determined by Fishe and Subbarow method as described by Oser (1965), the

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CPK, ALP and Vitamin A was determined by method as described by Varley (1988) and Vitamin E was determined by Nair and Magar (1955) method.

## Results

The musculo-skeletal affections diagnosed are enlisted in table 1 and accordingly 5 types of affections were diagnosed in 32 camels.

### A. Occurrence, diagnosis, treatment and analysis

Surgical affections of musculo-skeletal system of head and neck included mandibular fracture (14), torticollis (1), contusion at neck (1) and facial nerve paralysis (1). Pectoral myositis (15) was recorded as surgical affection of musculo-skeletal system of thoracic region.

The occurrence of diverse surgical affections of musculo-skeletal system of head, neck and thoracic region were recorded in male camels only. The occurrence of surgical affections of musculo-skeletal system of head and neck was 53.13% and thoracic region was 46.87%.

A detailed description of diagnosis and treatment of individual surgical affection of musculo-skeletal system was noted in various groups of present study and is given below.

#### *Surgical affections of musculo-skeletal system of head and neck*

##### *a) Mandibular Fracture*

Mandibular fracture was recorded in 14 male camels. Majority of cases had a history of fighting with another camel, whereas few had history of accidental trauma. Lower jaw or mandible had a downward inclination cranial to the fracture site, thus making lips apart (Fig 1). Animals were neither able to eat nor drink. In some cases profuse bleeding or haematoma was seen at the site of fracture due to disruption of gingiva. Fracture was diagnosed on the

basis of clinical signs and a lateral radiograph (Fig 2). All fractures were across the alveoli of tusches.

All cases of mandible fracture were treated by interdental wiring (IDW) technique (Fig 3) as described by Gahlot *et al* (1984) and Gahlot (2000). The reduction and immobilisation was confirmed radiographically (Fig 4). Postoperatively, these animals were administered injection oxytetracycline hydrochloride 1500 mg I/U for 7 days and injection meloxicam 150 mg I/M for 3 days. Oral cavity was irrigated daily with light potassium permanganate solution (Fig 5) and animal was offered roughages with soft dry leaves with minimum straws. A submandibular abscess was formed in all the cases which was drained by giving a criss-cross incision on the ventral aspect of mandible. The wound was dressed with 5% povidone iodine and fly repellent ointments. Clinical union occurred in 10 weeks (10 cases) and 8 weeks (4 cases). Wires were removed in these cases, after clinical union. The prognosis was favourable.

##### *b) Torticollis*

It was recorded in one case. Animal had S-shaped deviation and severe pain at neck region (Fig 6). Animal was unable to get up and remained in sternal recumbency.

Animal was sedated with xylazine at the dose rate of 0.3 mg/kg I/V after securing the animal in lateral recumbency. The bent neck was made straight by gentle traction. A piece of plywood was cut to the size and width of the neck and length was taken from mandible to little cranial to the shoulder region. The piece of plywood was applied on either side of neck using soft cotton padding between neck and plywood. A thick cotton cloth bandage was applied around the neck and splint with a gentle pressure (Fig 7) and animal was allowed to recover. Postoperatively, animal was administered injection of vitamin B<sub>1</sub>, B<sub>6</sub> and B<sub>12</sub>, 20 ml I/M and injection dexamethasone 80 mg I/V for 3 days. Animal was unable to get up

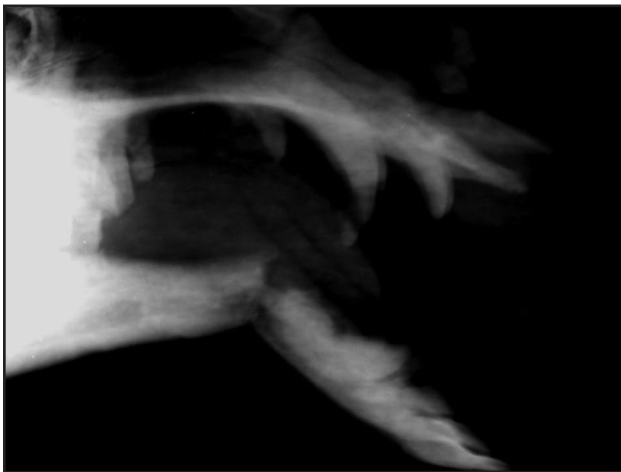
**Table 1.** Groupwise analysis of surgical affections of musculo-skeletal system of male and female camels noted in present study.

Groups	Name of groups and surgical affections of musculo-skeletal system	Sex		Total	%
		M	F		
1.	Surgical affections of musculo-skeletal system of head and neck	17	-	17	53.13
	Mandibular fracture	14		14	43.75
	Torticollis	1	-	1	3.125
	Contusion at neck	1	-	1	3.125
	Facial nerve paralysis	1	-	1	3.125
2.	Surgical affections of musculo-skeletal system of thoracic region	15	-	15	46.87
	Pectoral myositis	15	-	15	46.87
<b>Total</b>		32	-	32	

\* Indicates out of normal reference range in serum parameters of affected camel.



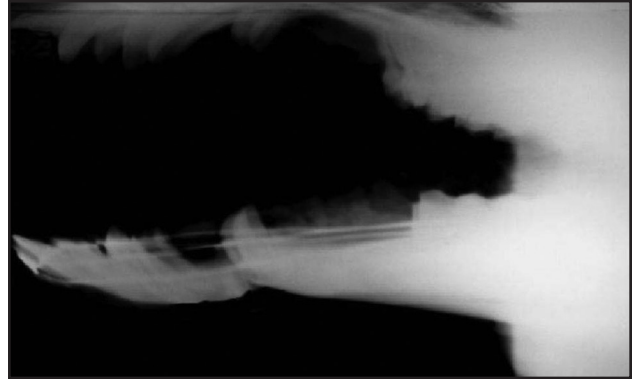
**Fig 1.** Atrial fibrillation in a 5-year old male dromedary camel. P waves are absent and the baseline shows multiple f waves. There is wide variation in R-R intervals and QRS-T complexes are normal in configuration. This record presents obvious tachycardia.



**Fig 2.** A latero-medial radiograph of camel as shown in Fig showing a transverse mandible fracture at the alveoli of tusches. Note the abnormal angulation cranial to the fracture site.



**Fig 3.** Mandible fracture was repaired by interdigital wiring technique. Note the copper wires lateral to the incisors and knots are visible close to the central incisors. It showed a perfect reduction and immobilisation.



**Fig 4.** A latero-medial radiograph of mandible of camel showing immobilisation with interdigital wiring. Note the slight overriding at fracture site.



**Fig 5.** Irrigation with light potassium permanganate solution of oral cavity following repair of mandibular fracture by interdigital wiring.



**Fig 6.** A camel with torticollis showing a characteristic S-shaped bend at the neck and was unable to get up.



**Fig 7.** The camel shown in Fig after application of splint and bandage under xylazine sedation. Note the straight neck with disappeared bend.



**Fig 8.** Contusion and 3 abrasions at the distal latero-ventral aspect of neck in a camel.

and succumbed after 3 days of immobilisation. The prognosis was unfavourable.

### **c) Contusion and abrasions at neck**

It was observed in one male camel with history of external truma with a stick blow 2 days ago. There was a marked cellulitis at latero-ventral aspect of neck with presence of 3 abrasion wounds. The 2 abrasion wounds measured were approximately 3.5 cm long and the 3rd one was 1 cm long (Fig 8).

Animal was treated with injection oxytetracycline hydrochloride 1500 mg I/U for 7 days, injection meloxicam 150 mg I/V for 3 days and injection dexamethasone 80 mg intravenously for 2 days. The abrasion wounds were dressed with 5% povidone iodine and fly repellent ointments. The prognosis was favourable.



**Fig 9.** Facial nerve paralysis of left side in a camel. Note the relaxation of the right upper and lower lip and tongue protruded as a flaccid part from left buccal commissure.



**Fig 10.** A camel showing pectoral myositis which was characterised by tenderness and swelling at pectoral region. Note the lameness of right forelimb and swelling in muscles at pectoral region.

### **d) Facial nerve paralysis**

It was recorded in one male camel. The left commissure with lower lip and tongue was drooping. Drooling of saliva from left side was also reported. The cheek muscles appeared flaccid (Fig 9). There was a trapping of food between cheek and cheek tooth. There was no resistance to finger or instrument being passed at this area.

Animal was treated by administration of injection streptopenicillin 7.5 g, I/M for 7 days, injection gentamycin 2400 mg, intravenously for 3

days, injection dexamethasone 80 mg, I/V for 3 days and injection of vitamin B<sub>1</sub>, B<sub>6</sub> and B<sub>12</sub>, 20 ml I/M for 7 days. Animal had remarkable improvement after 48 hours of treatment. After 72 hours of treatment the left side of cheek muscle showed tone and trapping of food and drooling of saliva was minimised. There was a little recovery after 72 hours of treatment and animal was administered oral mixture of minerals and multivitamins. Animal was observed up to one week and was discharged thereafter. Follow-up progress was not reported by the owner. The prognosis was guarded.

### ***Surgical affections of musculo-skeletal system of thoracic region***

#### ***(a) Pectoral Myositis***

Pectoral Myositis was recorded in 15 male camels. It was manifested as stiffness of fore limbs and there was shortened anterior phase of stride with inability to move. Animal showed pain and tenderness of the muscles of the pectoral region (Fig 10).

On the basis of treatment animals were divided into 2 groups. In group A, 9 male camels were treated and were administered, injection meloxicam 150 mg I/V for 3 days, injection dexamethasone 80mg intravenously for 3 days and 3 boluses containing vitamin E, Selenium and other minerals (FATMIN-Biovet Pharma) orally for 7 days. In group B, 6 male camels were treated and were administered, injection meloxicam 150 mg intramuscularly for 3 days, injection triamcinolone 5 ml intramuscularly for 3 days and multivitamin and mineral powder (Chelated Agrimin Forte- Virbac Animal Health India Pvt. Ltd.) 50 gm orally for 7 days. Animals showed remarkable improvement in lameness and further treatment was not required. Animal was given a 2 week stall rest. The prognosis was favourable.

#### ***B. Biochemical observations***

The biochemical values of Ca, P, CPK, ALP, Vitamin A and E have been given in table 2. The

Ca, P, Vitamin A and Vitamin E values in all cases were found lower than the reference values for their parameters in camels. However, the values of CPK and ALP were found higher than the reference values for their parameters in camels.

### **Discussion**

In animals of present study, the mandibular fracture occurred in 43.75% cases. Gahlot and Chouhan (1994) studied fractures in dromedaries and found the incidence of mandibular fracture to be 55.2%. In present study, majority of fractures occurred across the alveoli of tushes. Gahlot and Chouhan (1994) described this as anatomical weakness of bone at horizontal ramus due to presence of alveoli of tushes and mental canal in the region. All fractures recorded in clinical study were compound in nature and it was due to tearing action exerted by sharp fractured fragments over the oral mucosa. Seepage of saliva and ingesta into oral wounds led to development of a submandibular abscess in 7-10 days (Gahlot and Chouhan, 1994). However, in all animals of present study submandibular abscess developed in 10-15 days.

The mandibular fractures in present study were immobilised by interdental wiring (IDW) technique using copper wire (Gahlot, 2000; Gahlot and Chouhan, 1994, 1992). Mandibular fractures have also been repaired by silver wiring (Gahlot *et al*, 1984), bone plates (Kumar *et al*, 1979; Bhatia *et al*, 1978; Ramadan and Abdin-Bey, 1990), reinforced brass rod IDW technique (Ram, 1997; Ram and Gahlot, 2001), cross pin fixation (Zamos *et al*, 1992) and plaster of Paris bandaging (Lavania *et al*, 1999).

The torticollis seen in one case of present study was possibly due to trauma. However, exact etiology could not be ascertained. Drescher *et al* (1981) ascribed occurrence of torticollis due to fracture of vertebrae, sprain or dislocation. Gahlot (2000) described management of torticollis by providing external support with coaptation splint over the neck and stall

**Table 2.** Groupwise biochemical values of surgical affections of musculo-skeletal system of camels noted in present study.

Parameters	Head & Neck				Thoracic Region
	Mandibular fracture	Torticollis	Contusion at neck	Facial nerve paralysis	Pectoral Myositis
Ca $\mu\text{molL}^{-1}$	1.8 $\pm$ 0.1	1.5	1.8	2	1.56 $\pm$ 0.1
P $\mu\text{molL}^{-1}$	1.5 $\pm$ 0.1	1	1.5	2.1	1.22 $\pm$ 0.08
CPK UL <sup>-1</sup>	49.7 $\pm$ 2.4	35	40	35	43.27 $\pm$ 3.3
ALP UL <sup>-1</sup>	275 $\pm$ 18	220	250	300	287.3 $\pm$ 25.3
Vit. A $\mu\text{molL}^{-1}$	1.5 $\pm$ 0.1	1.2	1.5	1.8	1.11 $\pm$ 0.1
Vit. E $\mu\text{molL}^{-1}$	1.8 $\pm$ 0.1	2	2	1.7	1.69 $\pm$ 0.2

Note: In case where numbers of animals were more than one, mean $\pm$ S.E. are given.

rest of 8-10 weeks. However, similar treatment was adopted in animals of present study. Dioli (2010) also found an S-shaped deviation of neck with minimum neck mobility. Agab and Ahmed (2003) also reported S-shaped bend of neck in camel and found 5 out of 6 affected camels seropositive for brucellosis. However, in animals of present study serological diagnosis was not made for brucellosis. Al-Sobayil and Mousa (2009) also found deviation of neck and inability to stand in case of wry neck syndrome in camels of Saudi Arabia. They tried treatment with B-complex and phenylbutazone but all animals died within a week of admission. However, in animals of present study NSAID was given but animal did not survive.

Mishra and Behl (2008) reported that injury to facial nerve causes flaccid paralysis of the muscles of the affected side. In affected animals drooping of the ear and eyelid, drawing of the cheek towards the unaffected side and accumulation of the food in the unaffected side were the usual signs. The cause includes fracture of the petrous temporal bone, localisation of *Listeria monocytogenes* infection, prolonged recumbency and compression of nerve over the mandible and treated with nervine tonic and massage.

In present study, 15 cases of pectoral myositis were recorded. Gahlot (2000) reported that muscles are either pulled or injured in camels, causing spasm or contusion and manifested as lameness. Spasm of pectoral muscles was commonest and manifested by stiff gait and palpation. A combined therapy of phenylbutazone and corticoids for 3 days led to a good recovery.

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