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CLINICAL EVALUATION OF FRACTURES IN CAMELS (*Camelus dromedarius*)

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ABSTRACT

The clinical assessment of fractures in single humped camels was carried out in 97 cases of different age group. The cause, site and radiography of the fractures as well as the methods of treatment were recorded. Factors affecting fracture healing after treatment were investigated and analysed. Most of the fractures occurred during rutting season and mandible fracture was the most common. Treatment was performed either by plaster of Paris bandage with bamboo splint (39.17%) or with aluminium splints (16.49%) and interdental wiring (IDW) (42.26%). Satisfactory healing was recorded in 65.97% of the treated cases. External fixation using plaster of Paris bandage with bamboo splints and interdental wiring were successful treatment methods of fractures in camels.

Key words: Camels, external fixation, fractures, IDW, long bones, mandible

Fractures are the common surgical affection and these are traumatic in origin in camels. The commonest fracture is that of horizontal rami of mandible in camels followed by fractures of metatarsus and metacarpus (Gahlot and Chouhan, 1994). Constraints of camel orthopedics are numerous; hence, the principles of bovine and equine orthopedics cannot be applied on camels in absolute terms. On the other hand, camelids are known to tolerate well orthopedic surgery and the application of various orthopedic devices. Therefore, selection of a particular procedure should be dependent upon the bone involved, the nature of the fracture, available anaesthesia, equipment, instrumentation, skill and experience of the surgeon (Ahmed and Al-Sobayil, 2012). Present study is based upon clinical evaluation of fractures in dromedary camels.

Materials and Methods

Clinical cases of fractures in dromedary camels were investigated during the period from February 2011 to December 2012. These animals were presented at Teaching Veterinary Clinical Complex, College of Veterinary and Animal Science, Bikaner. Cases of fractures in different age group of camels were studied with special interest to record sex and season.

Two methods of external fixation were adopted to treat these. First method was application of plaster of Paris cast with bamboo splints or aluminium splint to treat long bone and digital fractures. Second method was interdental wiring (IDW) technique for repair of mandibular fractures under xylazine sedation (Gahlot, 2000).

Compound fractures were treated with local and systemic antibiotics (penicillin-streptomycin at a dose of 30,000 IU/kg of penicillin and 10 mg/kg of streptomycin) and dressing of wound was done through a window in plaster cast. The cast was removed after ascertaining the clinical union.

Amputation of limb was done in two cases which were compound fractures of metacarpus and gangrene took place in distal part.

Results and Discussion

Out of 97 cases of fractures recorded in present study the fractures of mandible, tibia, radius, metatarsus, metacarpus and femur were recorded (Table 1). The fractures were recorded more in male (n=82) than female (n=15). Most of the mandibular fractures occurred in winter (rutting) season (Table 2) because camel becomes more vicious and sustained fracture (Ram and Gahlot, 2001). The time elapsed between the occurrence of fracture to presentation to the clinic ranged from 1 to 10 days.

Treatment was performed on 95 cases by either a plaster of Paris bandage cast with a bamboo splint (n=38, 39.17%) or aluminium splints (n=16, 16.49%) in long bone fractures, by IDW (n=41, 42.26%). Amputation of the fractured limb was performed in

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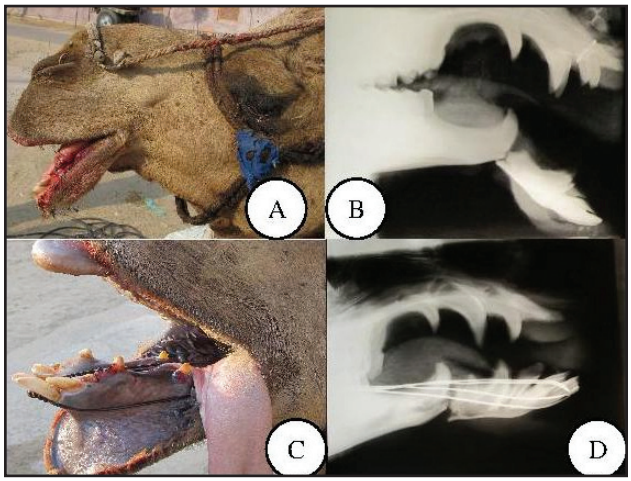

Fig 1. **(A)** Mandible fracture in a camel. **(B)** A latero-medial radiograph of camel showed transverse mandible fracture at the alveoli of tushes. **(C)** Mandible fracture was repaired by interdental wiring technique. **(D)** A latero-medial radiograph of mandible of camel showed immobilisation with interdental wiring. Note the slight overriding at fracture site.

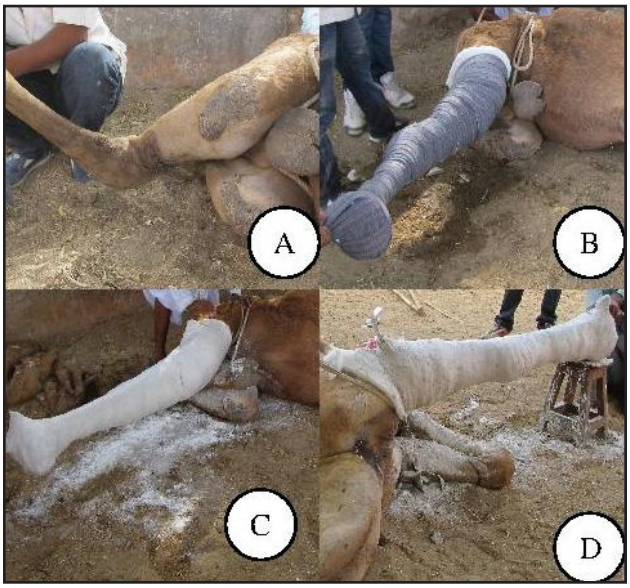

Fig 2. **(A)** A compound fracture at distal end of tibia in camel. **(B)** Padding with cotton and niwar bandage after reduction. **(C)** Fractured tibia was immobilised with plaster of Paris cast using bamboo splint. **(D)** Immobilisation of fractured radius ulna with plaster of Paris cast using Aluminium splint.

the remaining 2 camels (2.06%). Similar treatment was also reported by Quazi (2010) and Quazi and Gahlot (2012).

Satisfactory healing was recorded in 64 (65.97%) cases and mal-union or non-union was recorded in 33 (34.02%) cases. Plaster of Paris cast with a bamboo splint resulted in the healing of 23 (60.52%) out of 38 cases. Plaster of Paris bandage with aluminium splints resulted in the healing of 8 (50%) out of 16 cases. IDW resulted in the healing of mandibular fractures in 33 (80.48%) out of 41 cases. The healing time was from 6 to 9 weeks. These findings corroborated with the observations of Gahlot and Chouhan (1994) and Ahmed and Al-Sobayil (2012).

Mandible fracture may be up to 55 per cent of clinical cases (Gahlot and Chouhan, 1994). In the present study it was recorded to be (44.32%). Fracture of mandible is the most commonly observed fractures in camels. Bilateral or unilateral (rarely) mandibular fractures are common in male camel, that occur across the first premolars or quite cranial or caudal to this point in inter-dental space. These fractures are usually seen during the rutting season. In this season, males become quite active, vicious and tend to bite each other, leading to abnormal stress on the mandible which can cause fracture (Gahlot, 2000). Standard Interdental wiring technique using 2 mm copper wire is the method of choice to repair such fractures. The technique is simple, convenient and economical. The fracture site which needs repeated re-adjustment of the wires to keep the fractured fragments in normal alignment; otherwise it may lead to delayed union with downward mal-alignment or even non-union of the fracture. Development of sub-mandibular abscesses is a very common postoperative complication of these fractures and can lead to osteomyelitis if not drained and treated in time. Similar technique with the same postoperative complication has also been described by Dudi and Gahlot (2003).

The mandibular fractures in the present study were immobilized by Interdental wiring (IDW) technique using copper wire (Parsania *et al,* 1989; Gahlot and Chouhan, 1992, 1994; Gahlot, 2000; Quazi, 2010; Quazi and Gahlot, 2012). Gahlot *et al* (1984) repaired mandibular fractures using silver wiring, bone plates (Kumar *et al,* 1979; Bhatia *et al,* 1978 and Ramadan and Abdin, 1990), cross pin fixation (Zamos *et al,* 1992), reinforced brass rod IDW technique (Ram, 1997 and Ram and Gahlot, 2001) and plaster of Paris bandaging (Lavania, 1998 and Lavania *et al,* 1999).

Fractures of all long bones occurred in animals of present study except humerus. However, Al-Sobayil and Ahmed (2010) reported prevalence and treatment of fractures in 75 young camels and found tibial fractures as the prominent type of fracture. Immobilisation with plaster of Paris bandage alone or in combination with PVC splints, IDW and intramedullary pinning was reported and found satisfactory healing in 85% of cases. However, in

Table 1. Sex wise study of the fractures of different bones in single humped camels.

Sex	Mandible	Tibia	Radius	Metatarsus	Metacarpus	Femur	Total
Male	41	14	7	11	7	2	82 (84.53%)
Female	2	3	2	4	4	-	15 (15.46%)
	43 (44.32%)	17(17.52%)	9 (9.27%)	15 (15.46%)	11 (11.34%)	2 (2.06)	97

Table 2. Season wise study of the fractures of different bones in single humped camels.

Season	Mandible	Tibia	Radius	Metatarsus	Metacarpus	Femur	Total
Winter	35	11	5	9	7	1	68 (70.10%)
Summer	8	6	4	6	4	1	29 (29.89%)
	43	17	9	15	11	2	97

animals of present study also similar treatment was used with good success rate. Gahlot (2000) found fracture of mandible to be commonest followed by metatarsus and metacarpus but in animals of present study eventhough mandibular fractures were highest in occurrence but tibial fractures were found next to these.

In present study, hind limb fractures were higher than fore limb. Gahlot (2007) also reported that hind limb had highest occurrence of fracture of tarsal bone (5.71%), followed by fracture of metatarsus and fracture of phalanges (3.57%) and fracture of tibia (2.14%).

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