

Successful repair of avulsion fracture of mandible in a dromedary male camel

Suhel Anwar*

Al Qattara Veterinary Hospital, Abudhabi Food Control Authority, Al Ain, United Arab Emirates

*Corresponding Author:suhel_vets@yahoo.com

Paper No. 12: MS Received: 19 Feb, 2013 MS Accepted: 12 August, 2013

Abstract

A male camel of age 24 years was referred to the Al Qattara veterinary hospital with a history of injury in the lower mandibular area. On examination it was found a fracture in mandible with necrotic debris and yellowish pus at fracture site. There was only right lateral incisor present and rest of incisors were avulsed during an early accident. The fracture was diagnosed as avulsion type whereas the fracture line was running in oblique direction. The avulsion fracture was reduced and immobilized by modified circumferential wiring technique. Stainless steel wire was applied over the mucosal surface of lower mandible in the figure of 8 pattern. The animal recovered after 12 weeks uneventfully without complication except embedding of wire in soft tissue which was re adjusted on 10th postoperative day. It was concluded that avulsion mandibular fracture in camel can be repaired by circumferential stainless steel wiring

Keywords: Camel, Cerclage wire, Mandible fracture.

Introduction

Fracture of mandible is more common in male camel during rut season due to

fighting with other camels or biting. Most common fracture site is across the first premolars quite cranial or caudal to this point in inter-dental space. Usually such fractures are bilateral compound and transverse in nature or very rarely unilateral. Fractures elsewhere in the bone may be called atypical mandibular fractures and generally result due to road side accidents, blow against a fixed object or falling during a race (Siddiqui *et al.*, 2012). Avulsion fractures of the mandible in the equines are common and usually the result of kicks by another horse or self inflicted trauma against a fixed object (Henninger and Beard, 1997) whereas fractures of the mandibular symphysis, vertical ramus and avulsion type are rare in the camels (Siddiqui *et al.*, 2012).

The typical mandibular fractures can be successfully immobilized by the standard interdental wiring technique using 1.0 mm stainless steel, copper or silver wire (Gahlot *et al.*, 1984; Gahlot

and Chouhan, 1992), whereas atypical fractures may require other techniques such as bone plating (Kumar *et al.*, 1979), transfixation pins along with plaster of Paris bandage (Bhatia *et al.*, 1978), cross pinning (Zamos *et al.*, 1992), modified interdental wiring (Siddiqui *et al.*, 2012), and cerclage wiring (Siddiqui *et al.*, 2012).

The present case report provide information about successful management of avulsion fracture of mandible by cerclage wires with slight modification of the technique, described for horses (Henninger and Beard, 1997 and Beard, 2009), cattle (Rasekh *et al.*, 2011), camel (Siddiqui *et al.*, 2012) and dog (Coughlan and Miller, 1998; Tiwari *et al.*, 2012).

Case history

A male camel aged 24 years was presented to the central veterinary hospital Al qattara, Al Ain, United Arab Emirates with a history of fighting with other male camel during rut season in the farm 10 days ago. The injury in the mandibular area was gone unnoticed by the owner till the animal became anorectic. At the time of presentation the clinical examination revealed foul smell from the oral cavity with presence of yellowish pus and necrotic debris at fracture site. The animal was slightly dull and depressed with an elevated rectal temperature of 41°C. The examination of oral cavity revealed an oblique fracture line running caudally from the middle of central incisor to

the mid of right side inter dental space (Fig. 1). There was only right lateral incisor present and rest of incisors were avulsed during an early accident causing a transverse mandible fracture which was treated by conventional interdental wiring technique a year before the current injury. The avulsed portion of mandible fragment was hanging down attached with the soft tissue of jaw so the case was diagnosed as an avulsion fracture of lower mandible.

Surgical technique

The animal was restrained in sternal recumbency and sedated with Xylazine Hydrochloride and Ketamine Hydrochloride, each at the dose rate of 0.4mg per kg of body weight given intravenously. Both the drugs were mixed in the same syringe. The fracture site was cleaned with light potassium permagnate solution first, then necrotic tissue and small bone fragments were debrided as needed, lastly before manual reduction of fracture antibiotic powder was instilled in the gap. As there was no teeth available for anchoring the wire and lack of facility for bone drilling in the field it was decided to reduce the fracture with the help of stainless steel wire.

The modification of circumferential wiring technique comprised passing a stainless steel wire of 0.7 mm diameter directly over the mucosa from behind the lateral incisor taken in oblique direction on opposite side behind the canine tooth and then taken back on the



Fig. 1. Avulsion fracture of mandible of a camel. The oblique fracture line is visible running caudally from the middle of central incisor to the mid of right side inter dental space

other side behind the right canine passed over the dorsal surface of jaw in oblique direction anterior to left canine in a figure of eight pattern instead of passing both free ends through the skin as described for symphyseal fracture repair in dogs (Coughlan and Miller, 1998; Tiwari *et al.*, 2012). Both ends of wire were twisted together. Reduction of the fracture was obtained while the wire was tightened. The wire was cut off, leaving approximately 4 twists (Fig. 2). It was allowed to remain in place for 12 weeks postoperatively.

Postoperative care

Oral cavity was flushed daily by standard aqueous solution of Potassium Permanganate for 5 days. Streptopenicillin (Penstrep Norbrook, UK) injection was administered intramuscularly at the dose rate of 1ml / 20 Kg for a period of one week along with intravenous injection of Phenylbutazone (Phenylarthrite, Vetequinol, France) at the dose rate of 1ml / 44 Kg for 5 days.



Fig. 2. Circumferential wiring in a figure of 8 pattern applied directly over the mucosa of lower jaw of the camel with avulsion fracture of mandible of a camel

The owners were advised to give soft food (wheat gruel mixed with seedless dates) to the animals for the first two weeks and then gradually shift to semisolid and normal food (dry roughages).

Outcome

On 10th postoperative day the camel was examined and it was found that there was slight loosening of the wire due to embedding of the wire in the soft tissue of jaw. The fixation wire was slightly tightened again and removed 2.5 month later when there was evidence of fracture healing.

Discussion

Fractures of the mandible and maxilla usually occur from blunt trauma such as a kick. An avulsion fracture usually involve the incisors and a variable amount of the incisive bone that results when a horse is startled and pulls back abruptly while chewing on a fixed object (Henninger *et al.*, 1999). The incidences of such type of fractures are rare in camels and generally caused by trauma or road side accidents. Various techniques such as interdental wiring (Gahlot *et al.*,1984), bone plating (Kumar *et al.*, 1979), transfixation pins along with Plaster of Paris bandage (Bhatia *et al.*, 1978; Gahlot and

Chouhan, 1992) and plaster of Paris bandage with wooden splints (Lavania, 1998) have been described for the repair of typical mandibular fractures in the camel.

Avulsion fractures of the incisors are easily amenable to repair by tension band wiring, lag screw fixation, cerclage wires, figure 8 wiring across the fracture anchored by cortical screws placed in the mandible, diagonal wiring from incisors to canine tooth and interdental wiring in horses (Beard, 2009).

The goals of repair are alignment and stability and the simplest fixation method that achieves these goals will probably be successful. For any fracture configuration, there will be several treatment options or combinations of that will be satisfactory. Choosing between the various procedures is based on the individual fracture configuration, availability of materials, cost of implants, familiarity of the surgeon with the instrumentation, and personal preference.

In the present report, single Cerclage wire with slight modification in a circumferential 8 shape was used to immobilise the avulsion fracture which was quite inexpensive and do not require specialised skills and equipments as also suggested for equines (Henninger and Beard, 1997; Beard, 2009) and dogs (Coughlan and Miller, 1998; Tiwari *et al.*, 2012).

Slight loosening of the wire was seen

due to embedding of wire in the soft tissues of the oral cavity and readjustment had to be carried out because wire was not anchored through the interdental space, similar complication was documented earlier (Gahlot and Chouhan, 1992).

Other complications like development of submandibular abscess and osteomyelitis as reported previously (Gahlot *et al.*, 1984) were not seen in the present case.

Acknowledgements

Facilities provided by Director of Abudhabi Food Control Authority and technical assistance rendered by Mr. Ariful islam and are thankfully acknowledged.

References

- Beard, W. 2009. Fracture repair techniques for the equine mandible and maxilla. *Equine Vet. Educ.* **21**:352-357
- Bhatia, Y. S., Misra, S. S., Lavania, J. P. and Angelo, S. J. 1978. Surgical management of bilateral mandibular fracture in camel. *Indian Vet. Med. J.* **2**:85-87.
- Coughlan, A. R. and Miller, A. 1998 BSAVA Manual of Small Animal Fracture Repair and Management. British Small Animal Veterinary Association Kingsley House, Church Lane, U. K. 122-124
- Gahlot, T. K., Khatri, S.K., Chouhan, D. S., Choudhary, R. L. and Purohit, R. K. 1984. Repair of transverse mandibular fractures by silver wiring in camel. *Indian J. of Vet. Surg.* **5**:74-76.
- Gahlot, T. K. 1990. Repair of mandibular fractures in camels. International Conference Camel Production and Improvement Tobruk, Libya.

- Gahlot, T. K. and Chouhan, D. S. 1992. Camel Surgery. 1st ed. Gyan Prakashan Mandir, Gouri Niwas, 265 Pawanpuri, Bikaner-334003, India. 2.
- Henninger, R. W. and Beard, W. 1997. Rostral mandibular and maxillary fractures: Repair by interdental wiring. *Proceeding of the Annual Convention of the Am. Assoc. Eqine Pract.* **43**:136-137
- Kumar, V., Singh, G. R. and Datt, S. C. 1979. Treatment of unilateral fracture of mandible by bone plating in camels. *Indian Vet. J.* **56**:58-59.
- Lavania, J. P. 1998. A Field Oriented Immobilisation Technique for Mandibular Fracture in Camel: A Clinical Study. *Proceedings of the Third Annual Meeting for Animal Production Under Arid Conditions. UAE* **1**:174-179.
- Rasekh, M., Devaux, D., Becker, J. and Habil, M. S. 2011. Surgical fixation of a symphyseal fracture of the mandible in a cow using cerclage wire. *Vet. Rec.* **169**:252.
- Siddiqui, M. I., Telfah, M. N., Rashid, J. and Taleb, S. A. 2012. Modified Interdental Wiring. Technique for Mandibular Fractures in Camels: A Clinical Study. *J. Vet. Anim. Sc.* **2**:57-60
- Siddiqui, M. I., Anwar, S. and Telfah, M. N. 2012. Management of Atypical Mandibular Fractures by Cerclage and Standard Interdental wiring technique in the Dromedary Camel (A report of four cases) *J. Camel Prac. Res.* **19**:177-181
- Tiwari, S.K., Kaushal, G. D., Sharda, R., Singh, H. and Choudhary, Y. 2012. Successful repair of mandibular symphyseal fracture in a Dog. *Vet World* **5**: 762-763
- Zamos, D.T., Honnas, C. M., Herman, J. D., Sanders, E., Jensen, J. M. and Holcomb, J. R. (1992). Surgical repair of a fractured mandible in an adult camel (*Camelus dromedarius*). *J. Zoo Wildlife Med.* **23**: 364-368