CASE REPORT
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REPAIR OF BILATERAL MANDIBULAR FRACTURE IN A DROMEDARIUS CAMEL (*Camelus dromedarius*)

Sherin B. Sarangom[1]*, Aneeka Antony[2], V.C. Gopika[3], Arathy Krishna[4], S. Amal[5], S. Gishnu[6], G. Nitheesh, Varsha Mary Mathai[8] and T. V. Jayamohanan[9]

[1,8]Veterinary Surgeon, [2,3,4,5]Former Intern, [9]Chief Veterinary Officer (Retd.),
District Veterinary Centre, Kannur, Kerala - 670 001
[6,7]Veterinary Surgeon, Veterinary Hospital,
Kanhangad, Kasaragod district, Kerala - 671 315
Department of Animal Husbandry, Government of Kerala

*Corresponding author e-mail: sbs04vet@gmail.com

ABSTRACT

A 14-year old male camel (*Camelus dromedarius*) was referred for a dropped anterior lower jaw following a fight two days back. Orthopaedic examination revealed abnormal mobility of the lower jaw and crepitation anterior to the first premolars. The condition was diagnosed as bilateral complete transverse fracture of mandible at the level anterior to the first premolars. Bilateral modified interdental wiring was performed under general anaesthesia. External coaptation using a muzzle along with liquid diet was advised for three weeks. Animal was fed with solid feed from the sixth postoperative week. The wires were removed during the ninth postoperative week and the animal had an uneventful recovery.

Keywords: Mandible, Fracture, Camel

INTRODUCTION

Mandibular fractures are common among male camels and usually occur as a result of fights during the rut season (Siddiqui *et al*., 2012). The fractures are usually bilateral, compound and transverse in nature and occur across the first premolars or along the interdental space of rostral one third of horizontal rami (Ahmed, 2011). The different fixation techniques such as bone plating, external skeletal fixation, U-bar application, cross pin fixation along with tension band wires, inter-fragmentary wiring and interdental wiring between incisors and first premolars have been used for the repair of unstable fractures of mandible in camels (Zamos *et al*., 1992; Ahmed, 2011; Ahmed and Al-Sobayil, 2012; Karrouf *et al*., 2017; Bhabhor *et al*., 2024). The present case describes the

repair of bilateral mandibular fracture in a dromedarius camel by bilateral modified interdental wiring and its outcome.

CASE HISTORY AND OBSERVATION

A 14-year old male camel (*Camelus dromedarius*) with a body weight of 450kg was referred for dropped anterior lower jaw following a fight with another male camel two days back (Fig. 1A). On examination, severe bleeding and laceration of gingival mucosa were observed. The physiological values were within the normal range. On orthopaedic examination, the animal evinced severe pain. Abnormal mobility of the lower jaw and crepitation could be felt anterior to the first premolars. The fractured ends of the bone on either side was also visible (Fig. 1B). Based on the examination findings, the condition was diagnosed as bilateral complete transverse mandibular fracture anterior to the first premolars. Surgical repair of the fractured mandible by the modified interdental wiring technique using orthopaedic wires was resorted to under general anaesthesia.

TREATMENT AND DISCUSSION

The camel was fasted for 18 hours prior to surgery. Preoperatively, the camel was administered with 10% enrofloxacin (Enrin, Safecon Life sciences Pvt. Ltd., Sikandra, India) at the rate of 5 mg/kg body weight intramuscularly and meloxicam (Melonex, Intas Pharmaceuticals Ltd., Ahmedabad, India) at the rate of 0.25 mg/kg body weight subcutaneously. Sedation was achieved with xylazine hydrochloride (Xylaxin, Indian Immunologicals Limited, Telangana, India) at the rate of 0.2 mg/kg, administered intravenously. The animal was cast in sitting position on sternum in such a way that the neck was kept extended and the head rested on an elevated platform of hay bags (Fig. 1C). The surgical site was thoroughly lavaged with 0.9% normal saline and was aseptically prepared with oral 2% povidone iodine solution. General anaesthesia was induced with intravenous ketamine hydrochloride (Aneket, Neon Laboratories Limited, Mumbai, India) at the rate of 2 mg/kg body weight. Anaesthesia was maintained with a combination of xylazine hydrochloride and ketamine hydrochloride intravenously, at the rate of 0.2 mg/kg and 0.8mg/kg respectively along with perioperative intravenous infusion of normal saline.

Two 16G (1.2mm) 316L stainless steel orthopaedic wire, one on each side, were passed between the second premolar and first molar through the space on the margin of alveolar gingiva. The wires were passed from the lingual surface towards the buccal region. The medial limbs of the wires were brought cranially through the space between the central incisors and the lateral limbs through the lateral aspect of

the gums (Fig. 1D). The fracture was then reduced and held firmly in place with the support of an assistant. With the help of two wire twisters, the wires on both sides were simultaneously tightened by twisting the respective medial and lateral limbs along the base of respective central incisor. Once adequate stability of fixation was achieved, the wires were cut at a distance of 2 cm away from the gingiva. The tips of the cut ends were redirected towards the ventral gingiva to avoid trauma (Fig. 1E). The lacerated wounds on the gingival mucosa were apposed in simple interrupted suture pattern using 1-0 polyglactin 910 (Relyon glactin, Mco Hospital Aids Pvt Ltd., Hubli, Karnataka, India).

Postoperatively, antibiotics (enrofloxacin) were continued for five more days and analgesics (meloxicam) for three more days along with intravenous fluids and multivitamins. Regular application of honey and boric acid over the lacerated gingiva was advised for two weeks. Normal jaw movements were observed immediately after surgery. The rostral mandible was supported externally with the help of a muzzle for three weeks (Fig. 1F).The animal was fed with liquid diet during this period. The lacerated gingiva was found to have

Fig. 1: A. The camel presented with dropped anterior lower jaw, **B.** The fractured rostral mandible, **C.** The animal casted for surgical procedure, **D.** Interdental wire applied between central incisors and second premolars, **E.** The tips of the cut ends of wires redirected towards ventral gingiva, **F.** The rostral mandible supported externally by muzzle, **G.** The orthopaedic wires got buried within the gingiva, **H.** Animal during the sixth postoperative week

healed by the third postoperative week. Animal was fed with semisolid feed, given directly into the mouth, after 3 weeks. The entire lateral limb and most of the portions of medial limb of the orthopaedic wires got buried within the gingiva during the fourth postoperative week (Fig. 1G). Animal was allowed to grasp and to take solid feed during the sixth postoperative week (Fig. 1H). The wires were removed during the ninth postoperative week and the animal had an uneventful recovery.

The rostral one third of the horizontal ramus of mandible is susceptible to fractures due to the relatively small cross sectional diameter, and the presence of mental canal and alveoli of first premolar teeth (Lavania *et al*., 1999; Ahmed and Al-Sobayil, 2012). The technique used in the present case was simple, inexpensive and required less time for fixation. Also, the application of simultaneous bilateral interdental wires enabled to attain accurate alignment of the fracture fragments and adequate stability. The prehension and grasping of solid feed during the 6th postoperative week indicated clinical healing of fracture with callus formation. A relatively shorter healing time for mandible fractures in camels following surgery has been reported previously by Ahmed (2011) and Siddiqui *et al*. (2012). The postoperative complications associated with the repair of mandible fractures in camels include breakage or loosening of orthopaedic wires, gingival ulcerations, submandibular abscesses, mal-alignment of fracture fragments, intra-oral infection and osteomyelitis (Ahmed and Al-Sobayil, 2012; Kumar *et al.*, 2013). Such complications were not observed and the animal had an uneventful recovery.

SUMMARY

The repair of bilateral complete transverse fracture of mandible in a 14-year old male camel by bilateral modified interdental wiring and its outcome was discussed.

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