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Surgical Management of Tibiotarsus Fracture in Pigeon (*Columba livia domestica*)

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A B S T R A C T

A domestic pigeon (*Columba livia domestica*) weighing 500gm with history of right pelvic limb stuck in cage was presented to RVP, IVRI. On presentation, the bird was unable to bear weight on right pelvic limb. A crepitus was felt on palpation at the tibiotasrsal region during physical examination. Radiographic examination confirmed a simple, transverse, distal-diaphyseal fracture of right tibiotarsus. Bird was anaesthetized with ketamine. Surgery was performed for introduction of K-wire to immobilize the fractured bone and external immobilization done to restrict movement. The post-operative follow-up radiograph after four weeks shows complete union of fractured ends. The bird recovered uneventfully with complete weight bearing on affected limb and the K-wire was removed 6 weeks after the surgery. In summary, we concluded that intramedullary pinning under ketamine anaesthesia is a safe technique for the repair of tibiotarsal fracture in pigeons.

Introduction

Bone fractures are common in both wild and captive birds (Fix and Barrows, 1990; Houston, 1993). Avian bones, including limbones, are thin brittle and tend to break into fragments upon a variety of natural events like midair collisions, fights with other birds (Houston, 1993) or anthropogenic experiences like gunshot wounds, collisions with automobiles or fences, encounters with traps and attacks by animals like dogs and cats (Fix and Barrows, 1990).The present report describes a surgical management of a case of a compound tibiotarsus fracture in a domestic pigeon (*Columba livia domestica*).

Materials and Methods

A one-year-old female domestic pigeon (*Columba livia domestica*) weighing 500gm was presented in the Referral Veterinary Polyclinic, Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh, India, having history of right pelvic limb stuck in cage.On presentation, the bird was unable to

bear weight on right pelvic limb (Fig. 1). A crepitus was felt on palpation at the tibiotasrsal region during physical examination. Radiographic examination revealed a simple, transverse, distal-diaphyseal fracture of right tibiotarsus (Fig. 2). Based on the clinical and radiographic findings, internal fixation through intramedullary pinning was considered the best option performed for the treatment of fractured tibiotasrsal bone.

Pre-emptive analgesia was attained with meloxicam (Melonex®, Intas; 0.5mg/kg IM) later the general anaesthesia was then achieved with ketamine (Aneket®, Neon Labs; 50 mg/kg IM). Induction time recorded was 10 min. Then the bird was restrained in left lateral recumbency with affected limb on upper side and the surgical site was prepared for aseptic surgery by plucking the feathers and applying antiseptic solution containing cetrimide and chlorhexidine followed by povidone iodine painting and the lower part of the limb was wrapped in cotton bandage before applying sterile drapes. Theskin incision was made with scalpel in caudo-medial portion of the right tibiotarsus, allowing fractured site exposure after separation of muscles.K-wire of 1.2 mm by using Jacob chuck was inserted in normograde manner (from proximal end of tibia (Fig. 3) and then pushed to distal portion for fixation).After insertion of the pin ensuring proper reduction, muscles were sutured with vicryl (3/0) using simple continuous pattern and skin with polyamide (2/0) using simple interrupted pattern (Fig. 4). The extra pin was cut at the level of skin by a pin cutter after ensuring proper reduction of fracture fragments through post-operative radiographs (Fig. 5). Thebird recovered from anesthesia smoothly after 20-30 minutes of surgery. External immobilisation was done by applying splints made up of matchbox sticks wrapped in paper tape with soft light weighted bandaging (Fig. 6). Wings were wrapped with paper tape for few days and owner was advised to keep bird in aerated cardboard box for minimum 10 days to restrict movement.

Postoperatively, meloxicam (Melonex®, Intas; 0.2 mg/kg IM, once daily for 5 days) and enrofloxacin (Bayrocin®, Pfizer–Bayer; 10 mg/kg IM, once daily for 7 days) were administered along with antiseptic wound dressing for 10 days. The skin sutures were removed on 10th day postoperatively.

Results and Discussion

The bird started to bear weight on the affected limb from 5th postoperative day. The post-operative follow-up radiograph after four weeks revealed complete healing of fractured bone (Fig. 7). The bird recovered uneventfully shows full weight bearing on affected limb (Fig. 8) and the pin was removed 6 weeks after the surgery.

Surgical management of fractures in wild birds often presents a significant challenge to the veterinary surgeon (Kumar *et al.*, 2012). A number of standard orthopaedic techniques have been used for fracture management in wild birds like eagle and kites by several scientific workers with variable results (Guzman *et al.*, 2007; Manjulkar *et al.*, 2008). Previously, Gahlot *et al.*, (2005) reported repair of tibial fracture in a peacock using intramedullary pinning.

The majority of the callus tissue during healing is derived from the periosteal surface, and the blood supply to the periosteum from surrounding soft tissues is very important and the intramedullary circulation appears to be of less significance in avian bone healing than in mammals (West, 1996) as the healing in birds is faster than in mammals. Internal fixation coupled with external coaptation is also required to control rotation forces in birds (Peter and Patrick, 2013).

Degernes (2008) concluded that preanesthetic sedatives and other drugs should not be used in birds, with the exception of analgesics (e.g., butorphanol). Kamiloglu *et al*., (2008) concluded that ketamine alone can provide a more rapid and effective anaesthesia for the birds requiring urgent anaesthesia. The surgery lasted for 20 minutes during that time no additional anaesthetic was required and animal recovered after 20-30 minutes of surgery uneventfully in smooth manner.

Fig.1 Image showing fracture in right pelvic limb

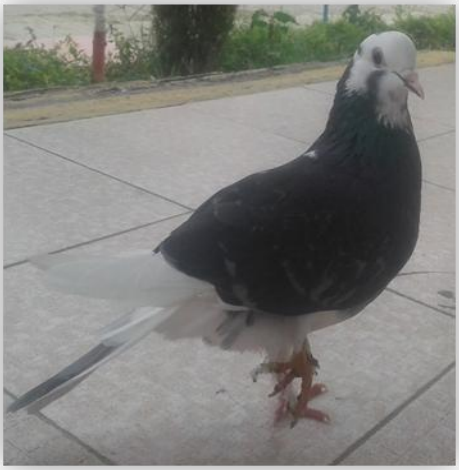

Fig.2 Radiograph showing fracture in right tibiotarsus

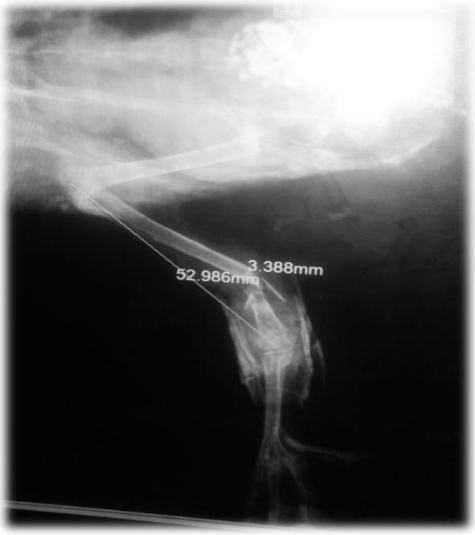

Fig.3 Inserting K-wire using hand chuck

Fig.4 Site after skin closure

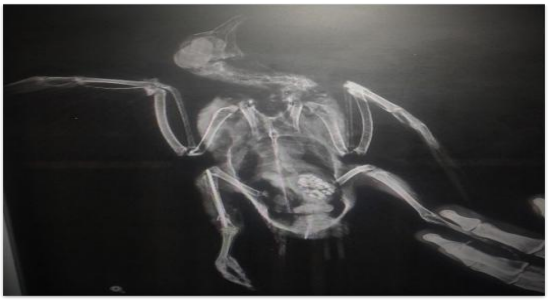

Fig.5 Post-operative radiograph showing alignment of fracture ends

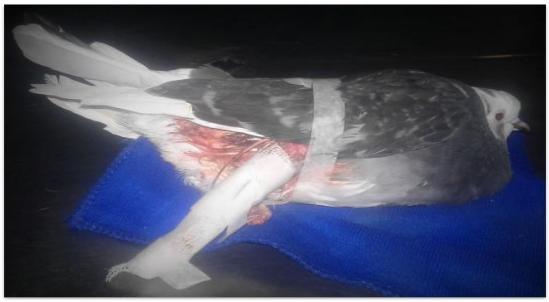

Fig.6 Image showing external immobilisation

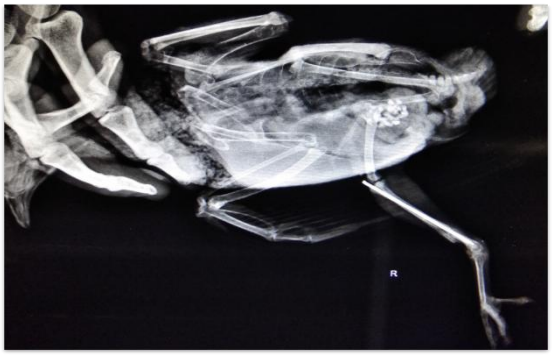

Fig.7 Radiograph on 30th post-operative day shows complete union of fracture

Fig.8 Image showing complete weight bearing on affected limb

In conclusion, intramedullary pinning done under ketamine anaesthesia is a safe technique for the repair of tibiotarsal fracture in pigeons.

References

Degernes, L. A. (1997). Trauma medicine. *In*: Avian Medicine: Principles and Application. Ritchie, B.W., Harrison, G. J. and Harrison, L. R. (eds.), Abridged Ed., Wingers Publishing, Lake Worth, FI, 33466., 16: 417- 133.

Fix AS and SZ Barrows, 1990. Raptors rehabilitated in Iowa during 1986 and 1987: a retrospective study. J Wildlife Dis, 26: 18-21.

Gahlot TK, *et al.*, Repair of tibial fracture in two peacock by intramedullary pinning. Indian J Vet Surg. (2005); 26:

119.

Guzman DS, LJ Bubenik, SK Lauer, S Vasanjee and MA Mitchell, 2007. Repair of a coracoid luxation and a tibiotarsal fracture in a Bald Eagle (*Haliaeetus leucocephalus).* J Avian Med Surg, 21: 188-195.

Houston DC, 1993. The incidence of healed fractures to wing bones of White-backed and Ruppell's Griffon-Vultures *Gyps africanus* and *G. rueppellii* and other birds. Ibis, 135: 468-475.

Kamiloglu, A., Atalan, G. and Kamiloglu, N. N. (2008). Comparison of intraosseous and intramuscular drug administration for induction of anaesthesia in domestic pigeons. *Research in Veterinary Science.* 85: 171-175.

Kumar V, DD Mathew, R Pathak, RA Ahmad and MMS Zama, 2012. Surgical Management of an Indian Spotted Eagle with Compound Fracture of Humerus. J Adv Vet Res, 2: 301-302.

Langley-Hobbs SJ and E Friend, 2002. Interlocking nail repair of fractured femur in a turkey. Vet Record, 150: 247-248.

Manjulkar GP, PR Zade and VP Pathak, 2008. Use of PVC sheet for Repair of fracture in Eagle, Vet World, 1: 119.

Peter H and TR Patrick, 2013. Surgical Resolution of Orthopedic Disorders. Clinical Avi Med, 11: 767-769.

West PG, 1996. Histomorphometric and angiographic analysis of bone healing in the humerus of pigeons. Anim. J Vet Res, 57: 1010-1015.

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