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Short Communication

SURGICAL MANAGEMENT OF COMPOUND DIAPHYSEAL FRACTURE OF HUMERUS IN A BLACK KITE (*MILVUS MIGRANS*)

Khan Sharun[1*], Mohammed Arif Basha[1], Amitha Banu S[1], A. M. Pawde[1], Amarpal[1]

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ABSTRACT: Fracture management in birds is a challenging task due to its low success rate. This is mainly because of the fact that avian bones have thinner, more brittle cortices and have pneumatic bones which are connected to air sacs. A Black Kite (*Milvus migrans*) was presented with the history of injured left wing due to Manjha/Manja (a sharp kind of kite flying thread) injury. Clinical and radiographic examination identified an open oblique fracture at the mid-diaphyseal area of humerus. Anaesthesia was performed by administering xylazine 5 mg/kg body weight intramuscularly which was followed by ketamine 15 mg/kg body weight intramuscularly. Following the aseptic preparation of surgical site, a 1.5 mm K-wire was inserted in a retrograde manner to fix the fractured bone fragments into apposition. Muscle and skin incisions were closed in standard manner. Post-operatively the wing was immobilised by bandaging. The bird was treated with antibiotics and anti-inflammatory drugs for five days. The Kite recovered uneventfully.

Key words: Black kite, Fracture, Humerus, Intramedullary pinning.

The Black Kites, *Milvus migrans*, belonging to the family Accipitridae are considered to be the most abundant species of this family. They are medium sized prey birds (Ferguson-Lees and Christie 2001). Like in pet animals, fractures are a common problem in wild as well as captive avian species. Incidence of wing and extremity fracture is observed more in avian species (Kayikci *et al.* 2019). The peculiarity of avian bones is that they are very thin, more brittle and pneumatic especially those connected with air sacs (Cano and Zarzosa 2012). This is the reason why avian bones are more prone to fractures. Most of the fractures are comminuted and open in nature (Molina-López *et al.* 2011). Trauma and inadequate management are the most common aetiology behind avian fracture (Carrasco 2019). Even though mammals and birds are having same basic principles for management of fracture, the anatomical and physiological variations have to be considered when dealing with avian orthopaedics. The aim of treatment is to restore and maintain the normal structure and function of the affected body part (Carrasco 2019). This report presents a case of compound oblique mid shaft fracture of humerus in a young Black kite managed with intramedullary pin.

History and Clinical Observations

A young Black Kite was presented to Referral Veterinary Polyclinic, Indian Veterinary Research Institute, Izatnagar with the history of trauma of unknown cause in the left wing and inability to fly (Fig. 1). The physical examination revealed that the bird was dull with exposed bones of left wing. The ventro-dorsal radiograph of left wing revealed compound, oblique, mid-diaphyseal fracture of humerus (Fig. 2). Based on the clinical and radiographic finding, intramedullary pinning of left wing was contemplated.

Treatment and Discussion

The Raptor was stabilized with intravenous fluids through wing vein and then prepared for surgery. Anaesthesia was performed by administering xylazine 5 mg/kg body weight intramuscularly which was followed by ketamine 15 mg/kg body weight intramuscularly. After plucking feathers from the surgical site, the site was

[1]*Division of Surgery, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly, Uttar Pradesh. India.*
**Corresponding author. e-mail: sharunkhansk@gmail.com*

Fig. 1. Black Kite (*Milvus migrans*) presented with compound fracture in the left wing.

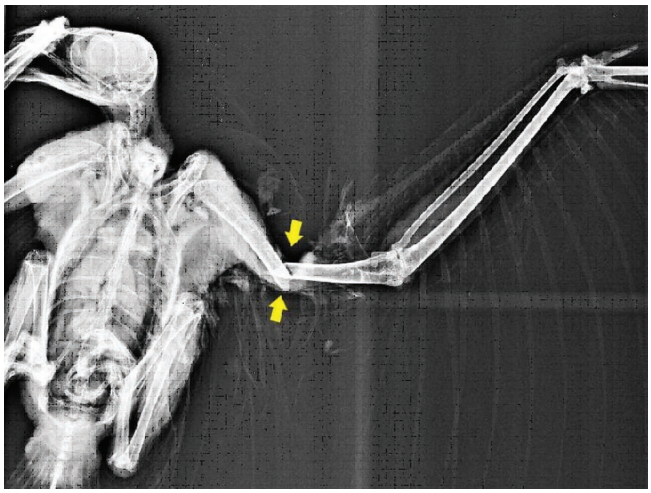

Fig.2. Radiograph of the left wing of Black kite showing complete oblique, mid-diaphyseal fracture of humerus (arrow).

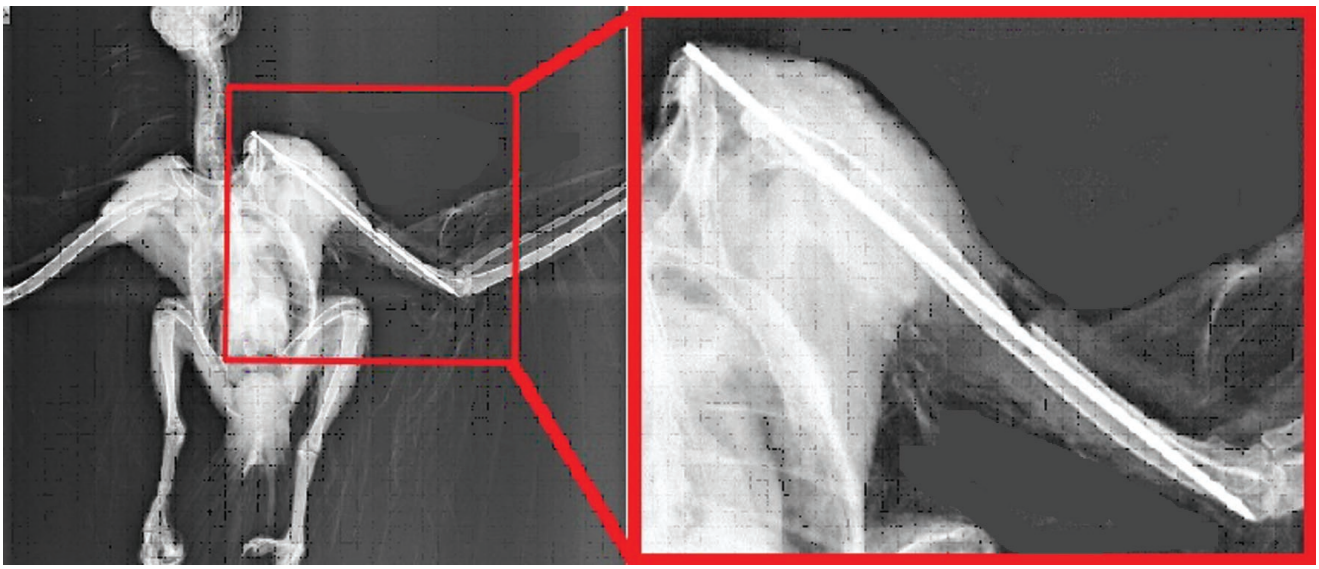

Fig. 3. Post-operative radiograph of left wing (humerus).

prepared aseptically. The raptor was then properly restrained in dorsal recumbency. The wound was thoroughly freshened and 5% povidone iodine was applied. Through the open wound the fractured bone ends were identified by separating the muscles. The K-wire of size 1.5mm was selected based on the measurement from the radiograph of fracture bone. The pin was introduced into the fracture fragment and driven proximally. The fragments were reduced, and pin was inserted into the opposite fragment up to distal metaphysis (Fig. 3). Extra length of pin was cut using an orthopaedic pin cutter.

The muscle and subcutaneous tissues were sutured using polyglactin 910 (3-0) in simple continuous pattern. The skin was apposed in cross mattress pattern using polyamide. Neosporin powder (Glaxo SmithKline Pharmaceuticals Ltd.) was applied at the wound site and wing was bandaged. Post-operatively enrofloxacin was administered intramuscularly 20mg/kg body weight along with meloxicam 0.5 mg/kg body weight intramuscularly for 5 days. It was also advised to keep the animal in confinement so as to provide proper cage rest. Skin sutures were removed on 10th post-operative day. Pin was removed after 30 days when complete healing of area was noticed. The raptor recovered uneventfully without any complications.

Surgical management of avian fractures is often challenging. Avian fractures are usually open, comminuted and infected. The contamination may be in such a large extent that chances of fragment necrosis are

more and standard stabilization technique becomes unsuccessful. In such instances, amputation of the affected limb or wing is the only option (Hatt *et al.* 2007). Conservative management of fracture is usually done through splinting, but the prognosis depends on stability and location of the fracture (Kumar *et al*. 2015). Intramedullary pins are good option to provide longitudinal stability and counteracting bending force. Both retrograde and normograde technique of pinning can be used in avian. Retrograde is preferred since open reduction is having better understanding of fracture. The disadvantage is that there is more trauma to tissue unless and otherwise the tissue is gently handled (Carrasco 2019).

In birds surgical interventions should be done following the general anaesthesia to provide good muscle relaxation, unconsciousness, and reduction in motor control (Lierz and Korbel 2012). Unlike caged birds, the demand for accuracy of wing and leg function is higher in wild raptors and larger birds as they depend on their wing function for survival. In raptors, limbs must function effectively, with malunion and decreased joint range of motion the birds can never perform at previous levels and angulation and instability cannot be tolerated (Westfall and Egger 1979). The aim of treating a wild raptor species in the present case was to restore the wing function after stabilizing the bird with administration of fluids.

REFERENCES

Cano FG and Zarzosa GR (2012) Interactive avian anatomy: Functional and clinical aspects. In: Veterinary Anatomy. Veterinary anatomy and embryology. University of Murcia, Spain.

Carrasco DC (2019) Fracture management in avian species. Vet Clin North Am Exot Anim Pract 22(2): 223-238.

Ferguson-Lees J, Christie DA (2001) Raptors of the world. A&C Black.

Hatt JM, Christen C, Sandmeier P (2007) Clinical application of an external fixator in the repair of bone fractures in 28 birds. Vet Rec 160 (6): 188-194.

Kayikci C, Kuºcu Y, Durmuº A, Aslan L (2019) Fractures and treatment methods in wild avian. Van Vet J 30(2): 115-119.

Kumar P, Kachwaha K, Gahlot TK (2015) Immobilization of tibial fracture in Emu using fibre glass. Res Review J Vet Sci 2(1): 26-27.

Lierz M, Korbel R (2012) Anesthesia and analgesia in birds. J Exot Pet Med 21(1): 44-58.

Molina-López RA, Casal J, Darwich L (2011) Causes of morbidity in wild raptor populations admitted at a wildlife rehabilitation centre in Spain from 1995-2007: a long term retrospective study. PLoS One 6(9): e24603.

Westfall LM, Egger EL (1979) The management of long bone fractures in birds. Iowa State Univ Vet 41(2): 81-87.

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