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**Case Report**

# Surgical Management of an Indian Spotted Eagle with Compound Fracture of Humerus

Vineet Kumar*, D.D. Mathew, Rekha Pathak, R.A.Ahmad, M.M.S. Zama

*Division of Surgery, Indian Veterinary Research Institute, Izatnagar-243122, Uttar Pradesh, India*

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**Abstract**

An adult Indian Spotted Eagle (*Aquila hastata*) was presented with a history of being unable to fly. Clinical examination and radiography revealed a compound oblique fracture in the distal humerus of the right wing. The fracture site was grossly contaminated and the fragments were necrosed. Hence, to save the life of the bird, the wing was amputated under general anaesthesia, induced and maintained with ketamine. The surgical intervention led to uncomplicated recovery of an eagle.

*Keywords:* Humerus; fracture; amputation; Indian spotted eagle; *Aquila hastata*

## Introduction

Bone fractures are common in both wild and captive birds (Fix and Barrows, 1990; Houston, 1993). Avian bones are thin and 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, attacks by dogs or cats, etc (Fix and Barrows, 1990). The present report describes a surgical management of a case of a compound fracture of humerus in an Indian spotted eagle.

## Case history and observation

An adult, Indian spotted eagle (*Aquila hastata*) weighing 3 kg was presented to the Surgery Unit of the Referral Veterinary Polyclinics, Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh, India, with history of trauma following an attack by a cat. The bird was unable to fly. On presentation, the bird was in a shock like condition. Clinical examination revealed a foul smelling, grossly contaminated compound fracture in the distal humerus of the right wing. The fragments were found necrosed (Fig.1). The ventrodorsal radiographs of right wing revealed an oblique fracture of the distal humerus (Fig. 2). Based on the clinical and radiographic findings, amputation of the fractured humerus was considered the best option to save the life of the bird.

Fig. 1. Image of an Indian spotted eagle showing compound fracture of distal humerus.

Fig. 2. Ventrodorsal radiograph of right wing showing an oblique fracture of the distal humerus.

*Corresponding author: Vineet Kumar

*E-mail address:* bharadwaj374@gmail.com

## Surgical treatment and Results

Before surgery, bird was stabilized with dexamethasone (Dexona®, SarabhaiZydus; 2 mg/kg intramuscularly), Sodium chloride (0.9% w/v) solution (NS®, Nirlife; 40 ml subcutaneously, twice a day), enrofloxacin (Bayrocin®, Pfizer-Bayer; 20 mg/kg intramuscularly), meloxicam (Melonex®, Intas; 0.5 mg/kg intramuscularly). General anaesthesia was then achieved with ketamine (Aneket®, Neon Labs; 50 mg/kg intramuscularly). With the eagle in left lateral recumbency, 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 remainder of the wing was wrapped in cotton bandage before applying sterile drapes. The skin was incised and muscles were transected. The humerus was transected at the proximal third and muscles were sutured using chromic catgut no. 2-0 over the bone stump (Fig. 3). The subcutaneous tissue was sutured using chromic catgut no. 2-0. Finally the skin was closed by black braided silk no. 2-0.

Fig. 3. Intraoperative image showing transected humerus bone piece and repair of bone stump.

After the surgery, the bird recovered from anaesthesia smoothly. To prevent self mutilation during recovery, the bird was wrapped in a towel and kept in a horizontal position. Postoperative analgesia was provided by meloxicam (0.5 mg/kg intramuscularly, once daily) for 5 days. Enrofloxacin (20 mg/kg intramuscularly, once daily) was administered for 7 days. Daily dressing of the suture line was performed with povidone iodine solution. The skin sutures were removed on 10th postoperative day. The eagle recovered completely without any complications.

## Discussion

Surgical management of fracture in wild birds often presents a significant challenge to the veterinary surgeon. Avian bone fractures are often open and frequently comminuted, especially in wild birds (Bennett and Kuzma, 1992). A number of standard orthopedic techniques have been used for fracture management in eagle by several scientific workers with variable results (Langley-Hobbs and Friend, 2002; Davidson *et al*., 2005; Guzman *et al*., 2007; Manjulkar *et al*., 2008). In many cases, these fracture sites was grossly contaminated and the fragments were necrosed. In such cases, fragment stabilization with standard orthopedic techniques may not be useful. Hence, to save the life of the wild birds, amputation of the necrosed bony fragments may be the only choice. Hatt *et al.* (2007) also suggested that amputation of the wing is the treatment of choice for the surgical management of contaminated and infected fractures in grey parrot.

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