



SURGICAL MANAGEMENT OF OESOPHAGEAL OBSTRUCTION IN A BLACK KITE (*MILVUS MIGRANS*) – A CASE REPORT

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ABSTRACT

A clinical case of oesophageal obstruction in a sub-adult black kite (*Milvus migrans*) caused due to clogging of prey in the cervical oesophagus and its successful management is placed on record. Diagnosis was made by clinical examination reflected as a doughy lump measuring 7 cm in diameter in the mid cervical oesophagus. An emergency oesophagotomy procedure was performed under general anesthesia using a combination of xylazine and ketamine and the prey obstructing the lumen of the oesophagus was removed. Post-operative management was done by orogastric tube intubation for feeding, administration of broad spectrum antibiotics, analgesics and multivitamin supplements. The kite made an uneventful recovery and the skin sutures were removed on the 5th post-operative day followed by successful release in the natural habitat after 10 days.

KEY WORDS: Avian anaesthesia, black kite, oesophageal obstruction, oesophagotomy.

INTRODUCTION

Black Kite (*Milvus migrans*) is medium sized diurnal raptor in the family Accipitridae and is the most common bird of prey across the globe (Ferguson-Lees and Christie, 2001). The Indian populations are opportunistic hunters and well adapted to living in cities and are found in densely populated areas preying on birds, bats and rodents. The raptor bill plays a role in prehension and sometimes killing. Food is torn from the carcass by the sharp cutting edges or tomia of the bill. The tongue has a barbed surface, allowing greater manipulation of food. The oesophagus is strong and distensible with a well-developed crop. The stomach is thin-walled and muscular, adapted more for storage than grinding. The proventriculus is relatively large and highly distensible. Peristaltic waves move directly from the proventriculus, through the isthmus, into the ventricles, and finally pass into the duodenum. The final phase of gastric digestion involves pellet formation which is a compacted mass of indigestible material such as fur, feathers, grains, bones, teeth and claws within the ventriculus. To get rid of these indigestible parts, raptors cast (regurgitate or vomit) a pellet of fur and bones every 1-2 days and the process is called egestion or casting (Pollock, 2016).

Oesophageal obstruction is a rare finding in Black Kites and generally goes unnoticed due to wilderness of the species, hence less documented. Obstruction in the oesophagus occurs when a large prey is swallowed without proper tearing at the time of ingestion or more commonly when an ill formed pellet gets clogged in the oesophagus at the time of casting. The undigested claws

and feathers of the prey bird pierce into the soft tissue of oesophagus and resist egestion of the pellet leading to obstruction which is a surgical emergency.

CASE REPORT

A sub-adult black kite (*Milvus migrans*) weighing 1 kg found lying on the ground and gasping for breath was presented to the hospital. The raptor was recumbent in semi-conscious state with poor reflexes, hypothermia (102°F), tachypnoea and halitosis. Clinical examination revealed a tennis ball sized lump in the mid cervical oesophagus measuring approximately 7.00 cm in diameter, which was doughy in consistency (Fig.1). On orogastric intubation, the tube did not pass beyond the lump in mid cervical oesophagus. Based on the signs and clinical examination, the case was diagnosed as oesophageal obstruction which demanded an emergency oesophagotomy.

METHODS

Surgical Preparation and Anesthetic Protocol

As the condition of the patient warranted carrying out an emergency oesophagotomy procedure, the bird was prepared for aseptic surgery. The feathers of the raptor were removed by cutting from the base 3-4 cm around the surgical site and disinfected using chlorhexidine diluted to 0.05% followed by 1% povidone-iodine. Injectable anesthesia was administered intramuscular using a blend of equal parts of xylazine 2%, ketamine 10% and sterile water for injection at the rate of 1 mg per kg body weight.



FIGURE 1. Black kite in semi-conscious state with a visible lump in the ventral portion of mid-cervical region

Surgical Procedure

The kite was positioned in dorsal recumbency followed by draping of the patient. An orogastric tube was intubated to have better understanding of the affected area. A 5 cm long skin incision was made on the longitudinal axis over midline of the neck on ventral aspect at the centre of the impacted lump. Special precaution was taken to avoid lacerating the surrounding vital structures. The thin subcutaneous tissue was bluntly separated and the oesophagus was exteriorized and isolated to minimize contamination. The oesophagus wall appeared normal. The lumen was occluded cranial and caudal to the proposed oesophagotomy site with noncrushing forceps. Stay sutures were placed adjacent to the proposed incision site to stabilize, aid manipulation, and avoid trauma to the oesophageal edges.

A stab incision was made into the lumen on ventral side over the lump and the incision was extended 4 cm longitudinally. The lumen was exposed and the impacted mass was identified as a prey bird ingested by the kite which contained feathers, claws and undigested muscle mass (Fig. 2). The claws of the prey were piercing the oesophagus throughout and the remaining impacted mass was clogged cranial to the claws. The entire mass was carefully removed from the oesophagus using forceps avoiding laceration to the mucosa and contamination of the exposed surrounding tissues. The obstructed mass of the ingested prey bird weighed 170 gms. Post removal of the obstruction, the oesophagus was lavaged using warm sterile saline to ensure the patency and to rule out the presence of remaining body parts of the prey bird.



FIGURE 2. Removed out obstructed prey with visible limbs and feathers

Oesophagotomy incision was closed with two-layer simple interrupted sutures using chromic catgut size 4-0 to ensure greater immediate wound strength, better tissue apposition, and improved healing after oesophagotomy. The sutures were placed approximately 2 mm from the edge and 2 mm apart incorporating the mucosa and submucosa in the first layer of a two-layer simple interrupted closure. The knots were placed within the esophageal lumen. The adventitia, muscularis, and submucosa were incorporated in the second layer of simple interrupted sutures using chromic catgut size 4-0 with the knots tied extraluminally. The closure integrity was checked by occluding the lumen, injecting saline, applying pressure, and observing for leakage between sutures. The skin incision was closed by simple interrupted sutures using black braided silk size 3-0.

Post Operative Management

Post operative management was initiated by intubation of orogastric tube to ensure lumen patency and tube feeding for initial 3 days. The bird was housed in hygienic conditions and all standard stress reduction measures were

adopted including provision of supplemental heat to prevent the bird from expending energy on thermoregulation. Antibiotic cover was provided using Injection Ceftiofur 10 mg/kg intramuscular q12h for 5 days. Injection Meloxicam 1mg/kg intramuscular q12h was administered as analgesic for 3 days. Multivitamin drops were given orally for 10 days. Enteral nutrition was initiated one day post surgery. Meat based liquid diet and boiled eggs were offered through orogastric tube thrice daily not exceeding 2% of the body weight for initial 3 days and 5% of the body weight for next 4 days post surgery. Oral electrolyte fluids were offered before each tube feeding. The kite was switched to flesh diet 7 days post surgery.

RESULTS

The kite made an uneventful recovery (Fig.3). The skin sutures were removed on the 5th post operative day followed by successful release back to the nature after 10 days.



FIGURE 3. Post-operative status of recovered black kite

DISCUSSION

Birds of prey or raptors are wild species and do not demonstrate signs of illness until extremely sick. Because of the faster metabolic rate than mammals, these species progress from sick to critical and hence sick or injured individuals require prompt clinical response on the day of presentation. Thereby, oesophageal obstructions are rarely reported in wild birds because the affected birds cannot be traced easily within the survival limit. In the present case,

the obstruction was covering the whole lumen but timely assessment and correction saved the life of the bird.

Raptors typically tear pieces of meat from the kill before swallowing into the crop which is a simple storage organ, with no acid or enzyme to aid digestion. Here the food is maintained at body temperature until it 'passes over' after about 2-6 hours into the proventriculus, where the digestion commences. If there is an obstruction or delay in the crop emptying, then the ingesta will rapidly putrefy, resulting in toxemia and death (Forbes and Kubiak,

2016). In the present case, whole prey bird was found to be occupying the entire lumen of oesophagus which needed immediate veterinary intervention. Reporting on oesophageal obstruction in raptors are rare and gastric impaction usually involve proventriculus and ventriculus. However, Ninu *et al.* (2019) reported oesophageal obstruction in the distal third of the neck in domestic fowl and performed oesophagotomy to retrieve the foreign body.

The present case was managed using injectable anaesthesia. Although, Applegate *et al.* (2015) recommended the use of inhalation anaesthesia using isoflurane to perform surgical interventions on raptors however injectable anesthetics are preferred in field conditions or other situations where inhalation anaesthesia is not readily available (Gunkel and Lafortune, 2005). Looking to the veterinary emergency, the present case was managed successfully using the available anaesthetics. Crosta (2019) recommended the use of xylazine 2%, ketamine 10% and sterile water in equal quantity to be given for surgical anaesthesia in raptor birds at the rate of 1 mg per kg body weight. Korbel (2012) also described the combination of xylazine-ketamine for short term anaesthesia which can also be well assessed in raptors. However, inhalation anaesthesia should be the preferred choice while managing the surgical cases in avian species. After surgical correction, the oesophagus was sutured using two-layer simple interrupted closure pattern. Ninu *et al.* (2017) also recommended two-layer suturing pattern in the oesophageal incision to prevent leakage.

Although, the raptors suffering with this condition may appear bright but at the same time, these are at the poor risk for extensive surgery or handling. According to Forbes (2016), the most effective treatment is, anaesthesia, administration of fluid therapy, opening the oesophagus or crop and removal of contents. If the bird is apparently healthy then the incision may be closed immediately and if weak it is left open and closed the following day. The similar procedure was performed in the present case under general anaesthesia and the incision was closed immediately after flushing the crop as the bird was apparently healthy and response to the anaesthesia was also

appropriate. Survival of raptors with oesophageal or gastric impaction mainly depends on the early diagnosis since early intervention is more likely to be successful in raptors with gastric impactions.

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