

Surgical management of crop affections in birds

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A total of 14 birds presented with crop affections were included in the present study. Clinical examination revealed that two cockatiels had feeding tubes placed in the crop; six country fowls were presented with feed impaction; two country fowls had nylon foreign bodies; one country fowl had a fish bone lodged in the crop; one Japanese quail presented with a safety pin as a foreign body; and a pigeon, a macaw, and a country fowl were presented with crop fistulae. The presence of foreign bodies was confirmed by palpation and radiographic examination. Crop impactions were treated by ingluviotomy. The crop fistulae and ingluviotomy incisions were sutured using 3-0 PGA suture material. A fish bone and a safety pin were retrieved from the crop with the aid of an otoscope.

Anaesthesia in all birds was induced with diazepam administered intramuscularly at 1 mg/kg body weight and maintained with 1–2% isoflurane inhalation anaesthesia using customised masks according to the size of the birds. Heating pads were used during anaesthesia to maintain thermoregulation. Postoperatively, antibiotics, multivitamins, and wound dressing were provided, and all birds recovered uneventfully. It was concluded that crop affections in birds caused by various etiologies can be effectively managed through timely surgical intervention when presented and treated at the earliest opportunity.

Keywords: Birds, Crop affections, Inguviotomy, Isoflurane anaesthesia

The crop (ingluvies) is a distal anatomical outpouching of the oesophagus in birds that functions as a temporary storage and fermentation chamber before further digestion commences. It is located immediately before the oesophagus enters the thoracic cavity. Crop affections in birds are commonly reported in neonatal and young birds, as the crop of neonates is more fragile and susceptible to injury than that of adult birds (Kumar *et al.*, 2016).

Primary non-infectious crop lesions mainly include crop burns, foreign body penetration, vitamin A deficiency, crop impaction, and ingluviolith formation. Penetrating injuries to the crop may occur due to animal bites, improper feeding techniques, ingestion of foreign bodies, trauma, or feeding excessively hot food, which may subsequently lead to crop rupture and fistula formation. Common foreign bodies encountered in the crop include metals, plastics, feathers, and stones, which may result in crop impaction (Wagner, 2005). Clinical signs associated

with crop impaction include depression, anorexia, dyspnoea, and absence of faecal output.

Management of crop affections often requires surgical procedures such as ingluviotomy or endoscopic intervention. Inguviotomy is a surgical procedure performed in birds to correct conditions such as crop impaction, crop rupture, and the presence of foreign bodies (Ravikumar and Gowtham, 2023). The present paper describes the diagnosis and surgical management of crop affections in 14 birds.

A total of 14 birds with crop affections were presented to the Department of Veterinary Surgery and Radiology, Rajiv Gandhi Institute of Veterinary Education and Research. Clinical examination revealed that two cockatiels had feeding tubes lodged in the crop, six country fowls were presented with feed impaction, two country fowls had ingested nylon foreign bodies (Fig. 1A), one country fowl had an ingested fish bone, and one Japanese quail had ingested a safety pin (Fig. 1B). In addition, a pigeon, a macaw, and a country fowl were presented with crop fistulae (Fig. 1C). The presence of foreign bodies was confirmed by palpation and radiographic examination (Fig. 1D). Crop fistulae were diagnosed based on the clinical history of feed material dropping from the crop and were further confirmed through radiographic examination.

For anaesthesia, diazepam was administered (1 mg/kg body weight, i.m.) as the induction agent, and anaesthesia was maintained with 1–2% isoflurane inhalation anaesthesia using customised masks according to the size of the bird (Fig. 2A). Thermoregulation during anaesthesia was maintained using a hot water bag.

Following feather plucking around the crop and preparation of the surgical site under aseptic conditions, ingluviotomy was performed to remove foreign bodies such as feeding tubes, impacted feed material, and nylon threads. With the aid of an otoscope, the fish bone and safety pin were carefully retrieved from the crop using mosquito artery forceps without causing tissue damage (Fig. 2B). In cases of crop rupture, necrotic tissues were debrided before repair. In both crop-rupture and ingluviotomy cases, the crop was sutured using a continuous suture pattern with 3-0 polyglycolic acid, while the skin was closed with an interrupted suture pattern using 2-0 nylon. The surgical site was protected with povidone-iodine gauze dressing and bandaging.

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Fig. 1: (A) Nylon in the crop; (B) Retrieved safety pin; (C) Fistulus crop in a pigeon; and (D) X-ray showing feeding tube in the crop.



Fig. 2: (A) Bird anaesthetised with customized mask; (B) Otoscopic visualisation of safety pin.

Postoperatively, enrofloxacin was administered (15 mg/kg, i.m.) for 5 days, and meloxicam was administered (0.2 mg/kg, i.m.) for 2 days. Oral cephalixin powder was given twice daily for 5 days, along with serratiopeptidase. Multivitamin syrup was also administered. Owners were advised to provide a liquid diet for the first 3 postoperative days. Skin sutures were removed on the 10th postoperative day. All birds recovered uneventfully following surgery.

In the present study, foreign bodies such as feeding tubes were removed from two cockatiels, nylon threads from two country fowls, and crop impaction was surgically corrected in six country fowls. All affected birds required immediate surgical intervention, as the crop is a unique organ in birds responsible for temporary food storage and moistening. Obstruction of the crop causes severe discomfort and may lead to serious complications; therefore, surgical ingluviotomy was performed to remove impacted feed material and foreign bodies from the affected crop (Hassan and Asrar, 2023).

Radiography proved to be a valuable diagnostic tool for identifying foreign bodies within the crop. Linear foreign bodies, such as feeding tubes, were clearly visualised on lateral radiographic views of the crop region. Lee *et al.* (2007) reported successful foreign body retrieval using flexible endoscopy and grasping forceps without complications. In the present study, a fish bone from a country fowl and a safety pin from a Japanese quail were successfully removed using mosquito artery forceps with otoscopic assistance. The crop was sutured using 3-0 polyglycolic acid in a continuous suture pattern, while the skin was

closed using an interrupted suture pattern, in accordance with previous reports (Mamza, 2020; Hussain *et al.*, 2020; Yadav *et al.*, 2021). The anaesthetic protocol used in all cases was found to be effective and free from complications. Similarly, Kumar *et al.* (2016) reported that oesophageal anastomosis in birds could be successfully performed under a light plane of anaesthesia without postoperative complications.

It was concluded that crop affections in birds caused by various etiologies can be effectively managed through timely surgical intervention when presented and treated at the earliest stage.

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