Use of a Standard Operative Laparoscope for Ventriculus Foreign Body Removal in a Toco Toucan (Ramphastos toco)

Pedro Paulo Maia Teixeira¹, Leandro Nassar Coutinho¹, Aline Eyko Kawanami², Alanna do Socorro Lima da Silva¹ Pedro Henrique Ferreira Teles, Marina Soares Botelho Brito¹, Felipe Farias Pereira da Câmara Barros¹, Marco Augusto Machado Silva¹, Karin Werther² & Wilter Ricardo Russiano Vicente¹

ABSTRACT

Background: Cases of ventricular foreign bodies are common in some species of birds. Moreover, ventricular impactions may develop depending on the type of the material ingested. The diagnosis is based on physical examination, radiography, endoscopy and surgical exploration. The choice of the treatment basically depends on the nature of the foreign body. Endoscopy is a less invasive approach that can be used in some situations, in some species. The benefits of endoscopic approaches are wide, as traditional approaches are more invasive and inflict a higher postoperative morbidity and mortality. However, the correct endoscope technique never been described. This study reports a case of a foreign body in a toucan’s ventriculus, removed using a standard operative laparoscope/nephroscope.

Case: A young Toco Toucan (Ramphastos toco) was referred to the Veterinary Hospital (São Paulo State University - FCAV/UNESP) by the State Environmental Guard. Survey radiographs indicated a foreign body in the ventriculus. The physical exam revealed apathy, but the bird was responsive to handling. The patient was pinioned. Based on the size of the foreign body, the endoscope retrieval was the first treatment option. The patient was fasted for 6 hours and anesthetized with isoflurane. The rigid endoscope/laparoscope with working channel was carefully passed through the esophagus, into the ventriculus. This view was impaired by a large amount of fibrin and gastroesophageal mucus, which was rinsed with normal saline and aspirated through the operating channel. There was marked hyperemia on the ventriculus mucosa and a large amount of fibrin and gastroesophageal mucus. The foreign body was retrieved using a standard 10-mm 0° rigid laparoscope/nephroscope with working channel, and a 42 cm long, 5-mmatraumatic laparoscopic Babcock forceps by gentle traction and axial rotation. The overall intervention time was 24 min, since mask induction until foreign body retrieve. The patient recovered with no complications in the early postoperative period and convalesced completely and uneventfully following 2 days.

Discussion: The operative rigid endoscope allowed for both visualization of the oral cavity, esophagus, proventriculus and ventriculus and foreign body removal, through the working channel, demonstrating the potential benefits and feasibility of such approach in birds. Nevertheless, up to date, endoscopy have been used in toucans only for sex determination. The current report demonstrated the effectiveness of endoscopy in order to avoid the risk of death due to a surgical approach. Gastrointestinal foreign bodies are common indication for endoscopic approach. If the foreign body is present in the crop, it is easily removed with the use of an endoscope and grasper forceps, or by ingluviotomy. Even though the foreign body passes into the proventriculus or ventriculus, rigid endoscopy may still be the best treatment option. The 30º Trendelenburg positioning was crucial for the complete success of the procedure, not only for avoiding the risk of fluid aspiration, but also for improving the access to the ventriculus.

Keywords: endoscopic, removal, aglandular stomach, toucan, Ramphastos toco.
INTRODUCTION

Proventriculus or gizzard/ventriculus foreign bodies are most commonly diagnosed in ratites, galliforms and waterfowl, but were also reported in psittacines and other species [6]. Endoscopy is routinely used to assess the respiratory tract, gastrointestinal tract and coelomic viscera, particularly the urogenital tract, liver, and kidneys in exotic avian [1,7,8]. The benefits of endoscopic approaches are wide, as traditional approaches are more invasive and inflict more risk of both postoperative morbidity and mortality. General anesthesia is recommended for all endoscopic procedures in order to avoid damage to equipment, patient, or staff. Most birds are anesthetized using isoflurane or sevoflurane delivered by mask and/or tracheal intubation [4].

Within such context, the aim of this case report was to describe a successful case of ventriculus foreign body removal in a Toco Toucan (Ramphastos toco), using a standard operative laparoscope.

CASE

A young Toco Toucan (Ramphastos toco), weighting 406 g, was referred to the Veterinary Teaching Hospital “Governador Laudo Natel” of the School of Agricultural and Veterinary Sciences “Júlio de Mesquita Filho”, São Paulo State University (HV/FCAV/UNESP) by the Environmental Police. The physical exam revealed apathy, but the bird was responsive to handling. The patient was pinioned. The hematological exam was within normal range for the specie. Survey radiographs indicated a foreign body of approximately 8 mm in diameter in the ventriculus (Figure 1).

Based on the diagnosis, the first alternative of treatment was the endoscopic retrieval. The animal was fasted for 6 h. General anesthesia was induced delivered by mask, and maintained through an endotracheal tube, using isoflurane in 100% oxygen. The toucan was positioned in sternal recumbency and 30° head-down tilt to displace the viscera cranially and decrease the risk of fluid aspiration.

A standard 10-mm 0° rigid laparoscope/ nephroscope with working channel, and a 42 cm long, 5-mm laparoscopic Babcock forceps, were used. The endoscope was inserted orally, through the esophagus, to the ventriculus and the foreign body was viewed (Figure 2). The first view was impaired by a large amount of fibrin and gastroesophageal mucus, which was rinsed and aspirated through the operating channel using normal saline and a suction pump. The mucosa was hyperemic along the digestive tract, specially the inner ventriculus surface. The foreign body was gently manipulated using the Babcock forceps and the foreign body was progressively removed in order to avoid mucosa ulceration or perforation. The overall procedure time was 24 min. The patient recovered uneventfully in the early postoperative period. The bird convalesced completely following 2 days.

Figure 1. Radiography of a Toco Toucan (Ramphastos toco), laterolateral and ventrodorsal projections. Presence of a radiopaque foreign body of approximately 8 mm in diameter in the ventriculus (red arrow).

Figure 2. Endoscopic image of the gizzard/ventriculus chamber. Visualization of the yellow/greenish aspect of the koilin layer and the forceps grasping (fg) the foreign body (fb).
DISCUSSION

The rigid endoscopy allowed the visualization of the oral cavity, esophagus, proventriculus and gizzard, demonstrating the usefulness of gastrointestinal tract endoscopy in this specie. Moreover, endoscopy had been employed in toucans only for sex determination in the current literature. The current report demonstrates the effectiveness of endoscopic foreign body retrieval, which reduces the risk of death inflicted by the invasive surgical approach. [3,5].

Foreign body ingestion is a common indication for endoscopy in several animal species. If the foreign body is found in the crop, it may be easily removed endoscopically or by ingluviotomy. If the foreign body has passed to the proventriculus or ventriculus, rigid endoscopy may still be helpful depending on the bird’s length [2].

The 30° head-down tilt, as described in other study [4], was crucial for the success of the procedure, not only to avoid the risk of aspiration, but also to aid the endoscopic access to the ventriculus lumen [5].

In conclusion, the use of a standard nephroscope allowed the insertion of the forceps through its working channel for safe handling of the foreign body within the gizzard chamber and should, therefore, be used as the first option of treatment.

SOURCES AND MANUFACTURERS
1 Isoflurane®, Cristalia. SP, Brazil.
2 Nefroscope, H.Strattner-Storz, RJ, Brazil.
3 Babcock, H.Strattner-Storz, RJ, Brazil.

Declaration of interest. The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

REFERENCES