

# *DoveLewis*<sup>®</sup> **Third Thursday Rounds**

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**June 18, 2020**

## **Gastrointestinal Foreign Bodies: Surgical and Endoscopic Management**

with Ashley Magee,  
*DoveLewis Surgeon, DVM, DACVS*

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# *DoveLewis* Third Thursday Rounds

# Virtual Third Thursday: Attendee FAQ's

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## **Do I need to create my own Zoom account to attend?**

No. You can access the webinar through a link provided on your phone, computer or tablet.

## **Is there someone to help if I have trouble accessing the lecture?**

Yes. Please reach us at [contact@dovelewis.org](mailto:contact@dovelewis.org) if you're experiencing difficulties joining the meeting. During the lecture, you can use the "Raise Hand" function and someone will be able to help you.

## **Is attendance tracked?**

Yes. As you register for the Zoom meeting, you will be asked to enter your name and email. Attendance is tracked for RACE records.

## **Is this lecture RACE approved?**

Yes. This lecture is RACE-Approved for one Interactive-Distance CE credit.

## **How do I get my RACE certificate?**

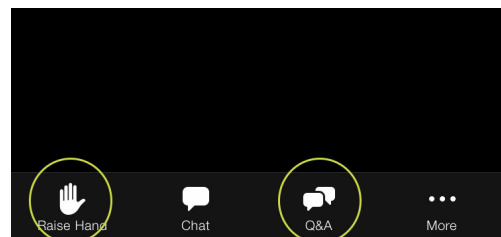
After you attend the lecture, you will receive an email with your RACE CE certificate. You will receive the emailed certificate within one business day of the event.

## **Will I be able to ask questions?**

Yes. If you have questions during the lecture, please use the Q&A function to submit your question. We will save questions for the end of the lecture.

## **Will I be able to talk?**

No. All attendees will be in listen-only mode. If you have a question or need help, the Q&A or Raise Hand function.



## **Will the presenter or other attendees be able to see me?**

No. All attendees will only have the capability to listen to the presenter.

## **If there are poll questions, do I have to participate?**

No. The poll questions are optional, but we encourage you to try!

## **Can I record the lecture?**

No. The lecture will only be recorded by DoveLewis, and will likely be available on [atdove.org](http://atdove.org) at a later date.

For more support, please email [contact@dovelewis.org](mailto:contact@dovelewis.org)

## **Introduction**

Foreign body ingestion is the most common reason for performing emergency surgery or endoscopy here at DoveLewis, with hundreds of animals treated either surgically or endoscopically and discharged from the hospital annually. Early, accurate diagnosis and definitive treatment can make the prognosis for these patients excellent for a full recovery.

In this lecture we will briefly discuss the history and clinical signs exhibited by a patient with a foreign body, the diagnostic tests that are most useful to run and how the results can help you differentiate a surgical from non-surgical abdomen. We'll then concentrate on treatment methods, both surgery and endoscopic removal, and post-operative care will be discussed. We will review several cases treated here at DoveLewis to illustrate several key points in the diagnosis and treatment of patients with foreign bodies.

## **I. History and clinical signs**

The clinical history of a patient that has ingested a foreign body usually suggests exposure to a tempting object. With canines, the propensity to ingest objects, such as toys, rocks, clothing, or blankets, or exposure to food items such as bones, corn cobs and peach pits (or garbage containing such items) is often reported by the owner. The feline offender usually has had access to string and/or needles, rubber bands, small toys, or crinkly plastic. Investigative history taking on the part of the DVM can often jog the client's memory and help bring these tendencies or exposures to light.

Patients that have ingested a foreign body can present with a wide range of clinical signs, from essentially asymptomatic to recumbent and obtunded, with the majority presenting with some degree of inappetence, vomiting and abdominal pain. At times a foreign body can be palpable on abdominal palpation or visible in the mouth around the base of the tongue. Patients can have subnormal to febrile body temperature, and vital signs and blood pressure may be low, normal or high. Typically, a patient will have normal temperature and vital signs, be somewhat dehydrated, and have normal to elevated blood pressure (a response to pain). When a patient with abdominal pain and a history suspicious of foreign body presents depressed, febrile or with a subnormal body temperature, hypotensive, and with a significantly high or low heart rate, advanced disease and/or sepsis should be suspected. In patients with fever, abnormal WBC count, and nausea but without abdominal pain on palpation, a diagnosis of enteritis should be considered

## **II. Diagnosis/Diagnostic tests**

Differential diagnoses to consider include enteritis (toxic, bacterial or viral) pancreatitis, hepatitis, urinary system disease, or other intestinal disease (mass, intussusception, volvulus, ulcerative disease). Diagnostic tests will help you rule out these other diseases and help confirm a diagnosis of a foreign body. The patient's hydration status, hematopoietic system and organ function should be assessed, as well as acid base status and electrolyte balance, via a CBC, serum chemistry and blood gas when possible. At a minimum, PCV/TS, sodium, potassium, chloride, calcium, blood glucose and creatinine should be measured to ensure the patient is able to undergo anesthesia, if exploratory celiotomy is to be considered. Abdominal radiographs in a patient with a foreign body may clearly demonstrate the object, as in the case of rocks, bone, or metal, may be suspicious for a foreign body (cloth, rubber bands, corn cob, tennis ball) or only show the sequelae to a full or partial obstruction as evidenced by intestinal dilation or plication. Poor serosal detail and free gas are suggestive of effusion and perforation, respectively. Diffuse moderate small intestinal distension with fluid and gas are usually associated with ileus,

and repeat radiographs after fluid resuscitation may show resolution of the concerning gas pattern. While a radiographic contrast examination (barium) can help confirm an intestinal obstruction, it is time consuming to perform and review and has the additional risks to the patient of aspiration pneumonia and barium peritonitis if the bowel is perforated. When possible, ultrasound imaging of the abdomen can be performed to rule out a foreign body. In experienced hands, it is a sensitive detector of foreign material within the intestinal tract. When peritonitis or perforation is suspected, ultrasound can be used to facilitate a peritoneal tap to assess for the presence of excessive white blood cells, protein and intracellular bacteria. Other diagnostics that can be considered to help confirm a foreign body in selected cases include a barium, negative or double contrast colonogram (to rule out a foreign body in the colon) or gastrogram (for occult foreign body in the stomach). Endoscopy can also be used as a diagnostic and treatment modality for many esophageal and gastric foreign bodies.

### **III. Surgical timing:**

Volume depletion should be addressed and rehydration should be well underway prior to anesthetizing patients for removal of foreign bodies. Serious electrolyte deficits should be addressed and rechecked to confirm correction prior to anesthesia. Blood pressure and temperature should be normalized; patients with low body temperature and blood pressure will do very poorly under anesthesia and are at risk for hypoperfusion and resulting complications (arrhythmias, ileus, poor healing, organ failure, and cardiopulmonary arrest). Exceptions to this rule may include the linear foreign body and cases of suspect perforation; in these patients the anesthetic risks may not be worth the risk of permanent extensive bowel damage and widespread peritonitis. In these cases, the anesthetic team must be ready for likely complications of arrhythmias, profound hypotension and hypothermia and be prepared to treat them (active warming, colloids, pressors, and cardiac medications). In patients with visible foreign objects in the intestine, a set of recheck radiographs is warranted just prior to induction to make sure the foreign object has not moved into the colon during the preoperative resuscitation with fluids, electrolytes and pain medications. In patients with a visible string foreign body under the tongue, the string should be cut immediately to relieve plication pressure on the intestines while the patient is being resuscitated.

### **IV. Surgery vs. Endoscopy:**

Endoscopy is reserved for foreign bodies within the esophagus or stomach only. In cases where there is an index of suspicion of multiple foreign bodies or linear foreign material affecting the stomach and intestines, exploratory celiotomy should be performed. Foreign bodies found entering the small intestine from the stomach should be left in situ and the patient converted to laparotomy for safe removal of the duodenal component of the foreign body. Foreign objects that are very hard and/or greater than 2-3 cm in diameter can be very difficult to grasp with delicate endoscopic instruments and pulled through the cardia. Exploratory laparotomy should be performed to remove these. Surgical removal of foreign bodies should be performed for all linear foreign bodies, multiple obstructions and large amounts of gastric foreign material. Foreign bodies in the colon will pass on their own in the vast majority of cases and do not need to be scoped or explored unless other foreign bodies are suspected. If a colonic foreign body is encountered during a celiotomy it should be milked into the colon and evacuated via the rectum to prevent unnecessary gas build-up oral to the object and subsequent pain and straining in the post-operative patient. Injecting warm sterile saline via a small bore needle into the lumen of the colon or having a non-sterile assistant perform a warm water enema intraoperatively can facilitate gentle passage of the foreign body into the rectum and out the anus. Gastrotomies are performed in standard fashion in the body or fundus of the stomach, not the antral area. Smaller foreign bodies can be removed non-invasively by manipulating them into the end of a large bore orogastric tube or by introducing an endoscopic grasping

forceps. Enterotomies should be performed on the antimesenteric border of the intestine just aboral to the obstruction, when possible, and closed in a single layer appositional pattern with fine monofilament absorbable material. Enterotomies should be leak tested with saline distention and additional suture applied where needed. Accurate tissue apposition is key for a leak free closure. Linear foreign bodies should be removed with as few enterotomies as possible; many times it is possible to milk the oral segment back in to the stomach for removal. Thread or fine string linear foreign bodies can be difficult to palpate and retrieve once the plication is relieved; in these cases a small segment of red rubber catheter can be tied to the cut end of the thread and reintroduced into the intestine and then manipulated orally or aborally for removal with the rest of the string through a final enterotomy or gastrotomy.

Resection and anastomosis should be performed when bowel is obviously necrotic or perforated. Necrosis is indicated by grey or black thin walls, thrombosed vessels and sometimes perforation. Resection should be performed in healthy bowel whenever possible; this may mean resecting a considerable segment of inflamed oral bowel in the case of a linear foreign body or a complete obstruction with considerable damage to the oral segments. If greater than 50% of the bowel is to be removed the client be contacted intraoperatively and informed of the risks of chronic diarrhea and malabsorption.

#### **V. Post-operative care and potential complications:**

Post-operative patients need IV fluid and electrolyte support, as well as intravenous opioid pain medications. Heat support and oxygen may be very beneficial in the first few hours post operatively. Antibiotics are given intravenously for 12-24 hours post-operatively, unless otherwise indicated by degree of damage to bowel, intestinal stasis, comorbidities of the patient, or degree of surgical contamination. After 12 hours, most patients can be offered water and a highly digestible food (I/D, EN), provided signs of ileus (absent bowel sounds, nausea, regurgitation) are not appreciated. If ileus is suspected, a nasogastric tube can be placed either intraoperatively or post-operatively and used to intermittently decompress the stomach to alleviate nausea and regurgitation and also to commence liquid enteral feeding in anorexic patients. Most patients spend 18-48 hours in the hospital post-operatively. They are ready for discharge when they have normal vital signs, are comfortable with gentle abdominal palpation and are eating small amounts of food. They should be sent home with strict exercise restriction for at least two weeks post-operatively while the abdominal incision gains strength. An e-collar should be dispensed for the patient to wear when not directly supervised to protect the closure from licking and chewing. Staples are removed at 10-14 days post-op. Potential complications in order of decreasing occurrence are: abdominal pain, ileus, incisional seroma, inflammation or infection, adhesion formation, peritonitis, and intestinal or abdominal dehiscence. Abdominal pain and ileus are minimized by good anesthetic and operative techniques as well as comprehensive post-operative treatment with pain medications, fluids/electrolytes, and supportive care. Incisional complications are minimized by good surgical technique including hemostasis and protection of the incision with moistened lap pads, proper suturing techniques balancing excessive dead space against excessive amounts of foreign suture material, and good postoperative hygiene and protection of the incision line from the patient until suture removal. Avoidance of intestinal healing complications is maximized by removing unhealthy tissue, meticulous, atraumatic surgical technique, minimizing contamination, minimizing hypotension, and hypoperfusion in the intraoperative and post-operative period, and proper patient support in the post operative period including avoiding anemia and hypoalbuminemia.

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*My Lecture Notes*

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e v b d g m r m d s i m p s a t h e e t a p l d  
b i s a u s g b r n c r r m a e r t s v p g e u  
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veterinary technician   veterinarian   vaccines   ultrasound   thermometer  
temperature   surgery   respiration   radiographs   pulse   cytology  
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dental   canine   autoclave   abscess



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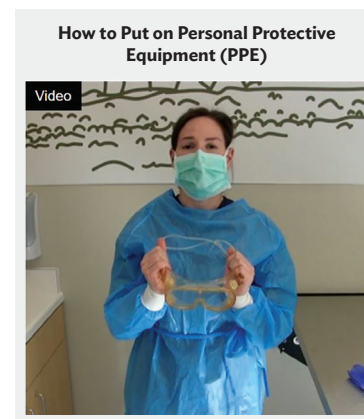
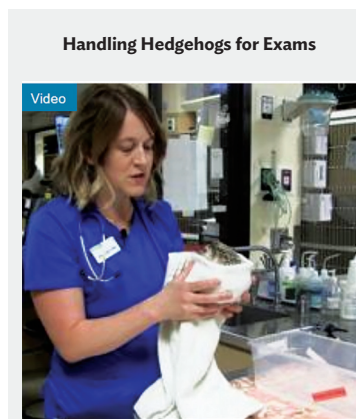
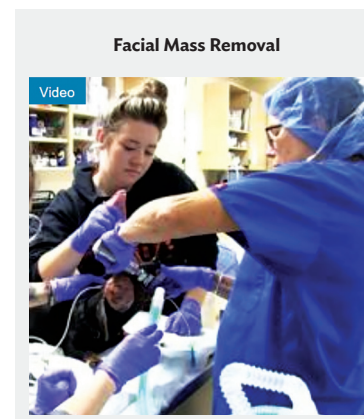
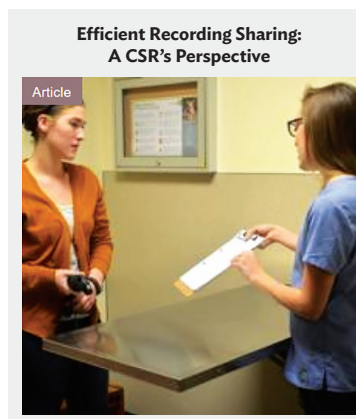
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