Canine and Feline Foreign Bodies –
*To Cut or Not to Cut?*

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Typical Objects

- Bones/Rawhide
- Toys and Balls
- Greenies
- Fish hooks
- Towels, Socks
- Underwear
- Nylons
- Grass

- Needles
- String
- Toys
- Elastics
- Plastic
- Hairballs
Typical Presentation

- The garbage was everywhere!!!
- She swallowed the needle before I could grab it!!
- He has always ripped up his toys but never eats any of them
- He has always eaten bones and never had an issue before
- There is no way that my Precious ate a foreign object
Assessment of Patients

- Common presenting complaints for esophageal foreign bodies:
  - Retching, ptyalism
  - Regurgitation of food and water
  - Anorexia
  - Restlessness
  - Cervical pain

- Less common presenting complaints:
  - Dyspnea/Cough
  - Lethargy
Assessment of Patients

- Common presenting complaints for gastric foreign bodies:
  - Vomiting
  - Hematemesis
  - Anorexia
  - Restlessness
  - Lethargy
  - Abdominal pain
  - Incidental finding in some cases
Diagnosis

- Physical examination
- Radiographs
- Contrast radiography
- Ultrasound
Diagnosis – Esophageal FB

- Most esophageal foreign bodies can be diagnosed with plain radiographs.
- FB tends to lodge in a narrowing, such as the thoracic inlet, the heart base or the lower esophageal sphincter.
- Radio-opaque material such as metal and bone are usually easily visualized.
- Softer material, such as softened rawhide, clothing may be harder to definitively diagnose.
Diagnosis – Esophageal FB

- Consider gas and fluid pattern in esophagus
- Barium can be used, but risk of aspiration and can be damaging to endoscope.
- Ultrasound rarely useful unless cervical in location
- Upper esophageal sphincter (UES) can appear as a FB – RARE to have a FB located in this area
Diagnosis – Esophageal FB
Diagnosis – Esophageal FB
Esophageal Foreign Body
Rawhide
Esophageal Foreign Body
Bone
Esophageal Foreign Body
Medi-Treat
Esophageal Foreign Body
Greenie

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D.O.BIRTH:

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COMMENT:

Mississauga - Oakville
ETERINARY Emergency Hospital
& Referral Group
Sharp bone
Diagnosis – Gastric FB

- Radiographs are most useful for metallic and very radio-dense foreign material
- Caution interpreting fluid in the pylorus
- Barium may outline some objects
- Ultrasound can be useful, however shadowing of gas can reduce visualization
- Close evaluation of pyloric outflow tract
- Index of suspicion
Ultrasound
Metallic objects
Radiodense objects
Radiodense objects
Plastic
Plastic
Plastic
Bones
Bones
Elastics
Grass impaction
Grass impaction
Grass impaction
Sharp objects
Sharp objects
Unusual objects
Barium – pros and cons

- Can highlight FB that is otherwise not visible
- Time consuming
- Can give false sense of security if FB is not seen
- Risk of aspiration, especially esophageal FB
- Barium reduces visibility of ultrasound of the stomach and intestine, and can mimic a FB
- Barium is damaging to the endoscope
Methods of Removal

- Inducing vomiting
  - Only should be attempted for smooth, smaller objects
  - Should never be performed for caustic substances
- Endoscopic removal
- Surgical removal
Inducing emesis

- Consider type and amount of material
  - Not if sharp, caustic, large amount, or material that absorbs water and expands
- Obvious cost savings for owner, less invasive
- Often drugs used for emesis can also be used as a premedication if GA then needed
- DO NOT feed animals with a FB prior to emesis unless you are sure that they are not going for endoscopy or surgery
Inducing emesis - Dogs

- Recent paper compared hydrogen peroxide with apomorphine
- Emesis rate ~90-95%
- Success rate for retrieving object ~50%
- About 15 minutes to time of emesis
- Emesis lasted longer for $\text{H}_2\text{O}_2$ than apomorphine (~45 mins rather than 30 mins)
- Need to use correct type and amount of $\text{H}_2\text{O}_2$
Inducing emesis - Dogs

- Apomorphine
  - 0.03 mg/kg IV
  - 0.04 mg/kg IM
  - One tablet crushed in conjunctival sac
- Anecdotal reports that IV works most rapidly and consistently
- Can cause sedation
- Hydromorphone as pre-medication
  - 0.1 mg/kg IV
Inducing emesis - Cats

- Overall success rate in inducing emesis in cats lower than in dogs (~50-80%)
- Dexdomitor most commonly recommended
  - 7 µg/kg IM or 3.5 µg/kg IV, reverse with atipamezole
- Xylazine historically used
  - 0.44 mg/kg IM, reverse with yohimbine or atipamezole
- Apomorphine and H₂O₂ not effective in cats
Endoscopic removal

- Several types of endoscopic removal devices
Removal of FB

- Firmer material is easier to grasp
- Caution if there are sharp edges
- Manipulating the FB through the upper esophageal sphincter can be a challenge
- Can push digestible material into stomach

Useful tips
- Long, rigid forceps to help grasp (UES)
- Use of foley catheters
- Use of over-the-endoscope tube
Benefits of Endoscopy

- Shorter anesthetic time
- Minimally invasive
- Reduced cost
Difficulties in Endoscopy

- Presence of food
  - Reduces visualization, hides foreign material
- Presence of barium
  - Damaging to endoscope, decreases visualization
- Presence of large number of FB
- Ability to grasp FB
- Ability to extract FB from stomach
Complications of Endoscopy

- Inability to remove FB (less than 10% for stomach)
- Perforation of esophagus or stomach (rare)
Decision making in FBs

- Discuss pros and cons with owner:
  - Large amount of material
  - Smooth, round objects especially if large
  - Sharp objects
  - Small objects in the stomach of a pet with a stomach full of food

- Go straight to surgery:
  - Intestinal foreign bodies, even if tethered in stomach
  - Any evidence of perforation (noted on ultrasound, or index of suspicion based on presentation)
Surgical removal of FB

- Challenging in esophagus
  - Requires thoracotomy in most cases unless cervical in location
  - Mortality rate of 10%; increases to 25% for older type of Greenies
  - Post operative stricture formation possible
  - Surgical emergency if esophageal perforation occurs
  - High cost of treatment and post operative care
Surgical removal of FB

- Gastrostomy is typically straightforward, easier to locate material than small intestine.
- If required along with gastrostomy, enterotomy can vary from simple, focal small FB to numerous enterotomies or resection / anastomosis.
- Even tethered to stomach, can be quite extensive into small intestine.
- Severe plication can lead to perforation.
Complications of surgery

- Dehiscence in 3-16% of FB cases
  - Death in 50-74% of these cases, usually 2-5 days after surgery
- Linear FB more likely to have dehiscence, longer hospitalization, higher cost
- Although enterotomy preferred, need to resect devitalized tissue so R/A indicated
- Ileus post-operatively
- Debated timing of feeding after surgery
Assessment of Patients

- Consider all of the following:
  - Age
  - Clinical signs
  - Suspected or known location of FB
  - Time since ingestion
  - Size, shape and nature of FB
  - Timing of most recent meal
  - Co-morbidities
Esophageal Foreign Bodies
Esophageal FB

- Foreign material in the **esophagus** will cause damage rapidly, often resulting in serious and life-threatening complications.

- Reasons for IMMEDIATE removal:
  - Erosions develop rapidly, which can lead to esophageal stricture after removal.
  - Perforation of the esophagus can result in fatal pneumothorax or chemical/bacterial mediastinitis.
  - Conversion to surgical removal has a very high complication and mortality rate.
Mild erosion post removal
Rawhide
Moderate ulceration post removal
Sharp bone
Deep ulceration post removal
Esophageal FB

- Most esophageal FB can be removed orally
- Some have to pushed into the stomach, then can be left to digest or removed via gastrostomy
- Highest risk for esophageal perforation:
  - Present for a long period
  - Material that expands such as rawhide, Greenies and cause a circumferential pressure necrosis
  - Material with sharp points, most commonly bones
  - Perforation results in pneumomediastinum and/or pneumothorax, and grave prognosis
Greenies

- Publication of 31 dogs with esophageal obstruction due to Greenies (2008)
- Primarily in small dogs given too large a chew
- Moderate to severe lesions in 86.7% of dogs
- Most had to be pushed into stomach
- Thoracotomy necessary in 6 dogs
- Mortality rate of 25%
- Company has since changed product
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**Sex:**

**Age:**

**D.O.Birth:**

**Comment:**
Gastric Foreign Bodies
Gastric FB

- Foreign material in the **stomach** may pass if small or digestible.
- For small objects, consider the possibility of obstruction once in the small intestine.
- If endoscopic removal is contemplated, this should be performed as soon as possible before passage of the FB into the intestine.
- Consider the amount of material, as well as the type of material.
Gastric FB

- Large amount of material
  - May be faster to remove surgically
  - Consider possible damage to UES and LES with repeated removal of material
  - Difficult to remove if pieces are very small, such as bone shards

- Sharp material
  - Razor blades, fish hook, +/- needles

- Large or smooth objects
  - Hard to grasp and hard to remove
Large smooth round objects
Smaller smooth, round objects
Smooth, round objects
Smooth, round objects
Bones
Plastic
Sticks/Skewers
Rope toys
Socks and underwear
Elastics
Hair balls
Grass impaction
Plant matter
Sharp objects
Baby bottle liner trick
Unusual objects
Gastric FB

- Most experienced endoscopists have a good sense of what is removable
- Sometimes we are optimistic!!
- Lots of tricks/options for removal
  - Grasping strategically to protect esophagus from sharp points, insufflation
  - ‘Drop in’ devices to protect esophagus when removing
  - Can convert to gastrotomy if indicated
IMs tips for surgery (!)

- Run the small intestine carefully for other FB
- Make a long enough incision to allow for evaluation of the whole GI tract
- Start at cleanest organ (stomach) then move to SI from proximal to distal
- Techniques to help with FB (cut string under tongue or in stomach, red rubber technique)
- Perform enterotomy rather than resection / anastomosis if possible
Questions?