

Peer Reviewed

Esophagitis

PROFILE

Definition

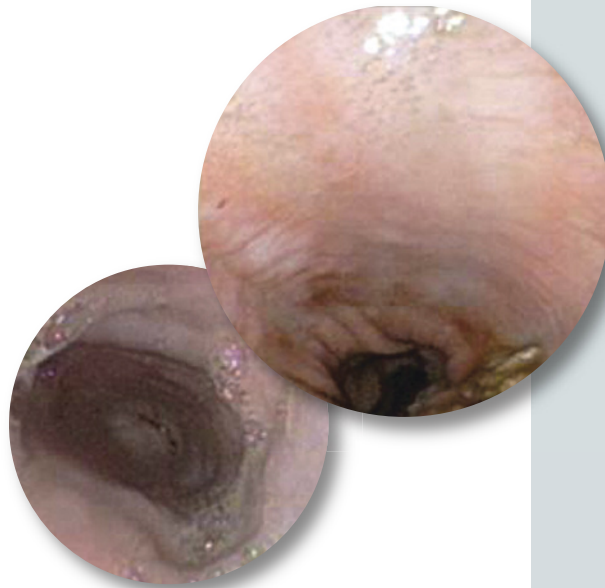
- Esophagitis is inflammation of the esophageal mucosa.
- Prevalence in dogs and cats is unknown, but underdiagnosis is likely, as clinical signs can be subtle or frequently confused with vomiting.
- Pay particular attention to pets that start vomiting within hours to days of anesthesia, as anesthesia-associated gastroesophageal reflux (GER) is a common cause of esophagitis.
- Geographic factors are unlikely to influence most cases unless *Spirocera lupi* is endemic.

Signalment

- Any dog or cat may develop esophagitis once esophageal mucosal injury occurs.
- Certain canine breeds (eg, brachycephalic breeds, shar-peis) are at increased risk for hiatal hernia and abnormal lower esophageal sphincter (LES) function, placing them at greater risk for GER-induced esophagitis.
- Female dogs are at increased risk for esophageal strictures (sequela of esophagitis) compared with males, although the reason is unclear.

Causes

- Chemical or mechanical injury to esophageal mucosa:
 - Most frequently results from GER at time of general anesthesia, although other causes of GER exist (eg, frequent or persistent vomiting, abnormal LES function, brachycephalic airway obstruction syndrome [BAOS]).
 - Can also result from caustic substance



ingestion (eg, strong alkalis in cleaning products), retention of certain medications within the esophageal lumen (pill esophagitis, which is well reported in cats¹), and radiation-induced cellular injury.

- Ingestion of abrasive or sharp foreign material.
- In dogs, esophageal inflammation associated with infection (eg, *Pythium insidiosum*, *S lupi*) and allergy can cause pyogranulomatous and eosinophilic esophagitis, respectively.²
- Retention of hair balls (trichobezoars) within the esophagus has been associated with esophageal strictures in cats.
 - Presumably plays a role in development of esophagitis.

Risk Factors

- GER is associated with anesthesia, frequent or persistent vomiting, and abnormal LES function (eg, hiatal hernia, BAOS).
- Foreign body ingestion/injury (eg, bones, plastic, trichobezoars [cats]).
- Certain oral medications (eg, doxycycline, clindamycin, bisphosphonates).
- Caustic substance ingestion (eg, strong alkali or acidic cleaning products).
- Radiation therapy in proximity of the esophagus.

CONTINUES

BAOS = brachycephalic airway obstruction syndrome, GER = gastroesophageal reflux, LES = lower esophageal sphincter

Pathophysiology

- For GER-induced chemical injury to esophageal mucosa, both the character of reflux (pH, bile acids, pepsin, trypsin content) and length of contact time are important determinants of injury.

Clinical Signs

- Because most pets with esophagitis present for vomiting, always attempt to differentiate vomiting from regurgitation (Table). Unlike vomiting, regurgitation is a passive process that typically occurs without warning.
- Dysphagia, gagging, ptyalism, odynophagia (painful swallowing), exaggerated swallowing or head and neck movements, lip licking, weight loss, inappetence, and coughing may be present.
 - Owners often underappreciate these signs.
- Cats may present with signs of apparent respiratory distress without evidence of aspiration pneumonia.
- Observing the pet while it eats is an important initial diagnostic investigation when history fails to confirm regurgitation or vomiting.

Pain Index

- General signs of malaise (inappetence, lethargy), ptyalism, and dysphagia may indicate esophageal pain.



DIAGNOSIS

Definitive Diagnosis

- Requires direct examination of the esophageal mucosa via esophagoscopy.
 - Mucosa may appear hyperemic; may contain erosions, ulceration, exudation, or fibrosis; or may appear granular or more friable than normal (Figure 1).
 - Repetitive damage to distal esophageal mucosa may result in Barrett's esophagus (replacement of squamous epithelium with metaplastic columnar epithelia), which appears more reddish.
- Endoscopy-negative esophagitis described in humans may occur in dogs or cats.
 - Term is used when there is no evidence of gross mucosal lesions on esophagoscopy, but clinical signs and histopathology of esophageal biopsies support diagnosis of reflux esophagitis.

Differential Diagnosis

- Other differentials: primary esophageal motility disorders (eg, idiopathic megaesophagus, myasthenia gravis) and esophageal masses or obstructive lesions.

Laboratory Findings

- Laboratory findings are often unremarkable.

- Remarkable findings will not be specific for esophagitis.

Imaging

Survey Radiography

- Survey radiography is always indicated for initial diagnostic workup of regurgitation or suspected esophagitis.
 - While sensitive for identifying esophageal foreign body, radiographs are often unremarkable or nonspecific for other causes of esophagitis (eg, regional or generalized megaesophagus).
 - Radiographic findings include hiatal hernia, aspiration pneumonia, or signs of esophageal perforation (pneumomediastinum, pneumothorax, mediastinal fluid).

Contrast Esophagram (Barium Swallow)

- Contrast esophagram is more sensitive than survey radiographs for detecting esophageal obstructive lesions (strictures, masses, radiolucent foreign body), motility disorders, and GER or hiatal hernia that may cause or contribute to esophagitis.
 - Typically, start with liquid barium, followed by barium-coated canned food, then kibble.
 - Avoid sedation if possible because of its effect on esophageal motility and LES function.



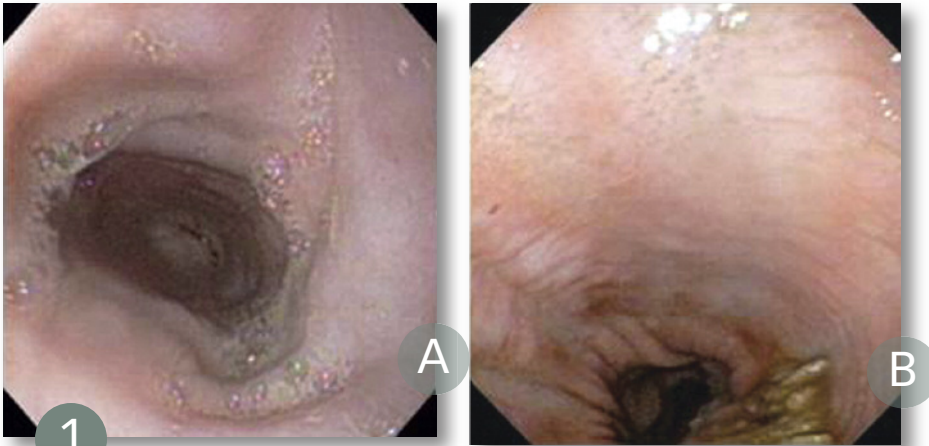
Table. Differentiating Regurgitation from Vomiting

Clinical Sign	Regurgitation	Vomiting
Prodromal nausea	Absent	Present
Abdominal effort*	Absent	Present
Timing of food ejection	Immediate or delayed	Delayed (minutes to hours)
Character of food ejected	Undigested	Partially digested, bile stained, pH <5

*Typically the most reliable sign recognized by owners

ALSO IN THIS ISSUE...

For more on differentiating these two clinical signs, see **Regurgitation or Vomiting?** by Dr. Alex Gallagher on page 33.



Endoscopic images of (A) smooth, glistening, pale pink normal canine esophageal mucosa and (B) erythematous and irregular canine esophageal mucosa typical of esophagitis with retained food material.

Medical

- Effective gastric acid suppression, especially if ongoing GER is present, is the most important aspect of esophagitis treatment.
 - Proton pump inhibitors (PPIs) are superior to H₂-receptor antagonists (H₂RAs) for managing esophagitis in humans.
 - Recent work also supports their superior antisecretory effects in dogs (feline studies not yet conducted).
 - If PPI therapy is cost-prohibitive, consider high-dose H₂RAs.
 - Time to maximal effect for PPIs is likely 2–4 days but suppression of intragastric pH in dogs is already superior to H₂RAs by day 2 of therapy.
 - Avoid coadministration of PPIs and H₂RAs, as H₂RAs reduce PPI effectiveness. With severe esophagitis, antacids may improve intragastric pH control during first 24–48 hours of PPI therapy.
- Prokinetic agents and sucralfate are frequently used to manage esophagitis in dogs and cats.
 - Prokinetic drugs increase LES tone, accelerate gastric emptying, and may improve esophageal contractility (cats only).
 - In humans, cisapride is generally considered more effective than metoclopramide.
 - Sucralfate provides cytoprotective effects to the esophageal mucosa.
 - Additional benefits of adding sucralfate to acid suppression ± prokinetic are unclear.
- Topical analgesia may be useful to reduce discomfort associated with severe forms of esophagitis.

Esophagoscopy

- Direct mucosal examination via endoscopy is the most sensitive test for identifying esophagitis but does not detect esophageal motility disorders, which are common in dogs.
 - Perform contrast esophagram before endoscopy unless the index of suspicion for esophagitis, foreign body, or stricture is high.
 - See **Definitive Diagnosis** for common gross endoscopic lesions of esophagitis.
- Compared with GER, pill esophagitis is typically focal, is circumferential, and involves the proximal third of the esophagus.
- Esophagoscopy may be helpful for identifying hiatal hernia and provides a means of obtaining diagnostic esophageal specimens (brush cytology or biopsy).
- Absence of mucosal abnormalities does not preclude esophagitis.

- Biopsy may also be helpful for diagnosing reflux esophagitis when no gross mucosal lesions are present.
 - Obtaining esophageal biopsy specimens from dogs and cats can be difficult and requires new (sharp) endoscopy pinch biopsy forceps or suction capsule biopsy instrument.

Distal Esophageal pH & Impedance Testing

- Advanced diagnostics used for diagnosing GER in humans.
 - Equipment and expertise for use in veterinary medicine not readily available.



TREATMENT

- In general, almost always medical treatment on outpatient basis.
- Surgical intervention (eg, BAOS, hiatal hernia, LES dysfunction unresponsive to medical therapy) is occasionally required.
- Hospitalization may be required for fluid therapy or nutritional support if regurgitation is severe or for treatment of aspiration pneumonia.

Other Diagnostics

Esophageal Cytology or Histopathology

- Often necessary for identification of eosinophilic, infectious, and neoplastic causes of esophagitis.

CONTINUES

BAOS = brachycephalic airway obstruction syndrome, GER = gastroesophageal reflux, H₂RA = H₂-receptor antagonist, LES = lower esophageal sphincter, PPI = proton pump inhibitor

Nutritional Aspects

- Smaller meal volumes and fat restriction help enhance gastric emptying and reduce gastric acid production.
- Consider gastric feeding tube for animals with poor body condition that are not eating well or if esophagitis is severe and the pet is not expected to eat within next 3–5 days.

Activity

- Restrict activity for 1–2 hours following meals.



MEDICATIONS

Acid Suppression

- PPI (eg, omeprazole, pantoprazole): 1–2 mg/kg/day (0.5–0.9 mg/lb/day) PO or IV, 20–30 min before eating and not broken or chewed (oral form).
 - Can administer delayed-release forms of omeprazole q24h.
 - q12h administration is ideal for immediate-release liquid forms.

OR

- High-dose H₂RA (eg, famotidine): 2 mg/kg (0.9 mg/lb) PO q12h.

Prokinetics

- Metoclopramide: 0.2–0.4 mg/kg (0.1–0.2 mg/lb) PO q8h.

OR

- Cisapride: 0.5 mg/kg (0.2 mg/lb) PO q8h.

Other Agents

- Sucralfate: 0.25 g (cat) or 1 g (large dog) PO q8h, ideally in liquid form.
- Topical analgesia: 4% viscous lido-

caine or 2% lidocaine jelly at 4–5 mg/kg (1.8–2.3 mg/lb) PO q6h for 1–4 days.

- Approximately 0.1 mL/kg (0.05 mL/lb) of 4% lidocaine or 0.2 mL/kg (0.1 mL/lb) of 2% lidocaine.
- Aluminum or magnesium hydroxide antacids: 0.5 mL/kg (0.2 mL/lb) of regular-strength formulations PO q4–6h for first 24–48 hours of PPI therapy (see **Treatment, Medical**).



FOLLOW-UP

Patient Monitoring

- Observe for signs of aspiration pneumonia (increased respiratory rate or effort, cough) and progression of dysphagia or regurgitation.

Complications

- Aspiration pneumonia.
- Benign esophageal stricture.
- Esophageal perforation (most often associated with esophageal foreign body).

At-Home Treatment

- Owners should offer small frequent feedings of a soft, nonabrasive, fat-restricted food.

Future Follow-up

- Consider esophagoscopy to detect (and treat) strictures if regurgitation persists or progresses in first 1–2 weeks of therapy.



IN GENERAL

Relative Cost

- Cost of diagnosis and management of esophagitis varies greatly, depending on cause and severity and whether presumptive versus definitive diagnosis is made: \$\$-\$\$\$\$\$

Cost Key

\$ = up to \$100 \$\$\$\$ = \$501–\$1000
 \$\$ = \$101–\$250 \$\$\$\$\$ = more than \$1000
 \$\$\$ = \$251–\$500

Prognosis

- Very good to excellent if no complications occur and cause can be removed.
- Good to grave if esophageal perforation or benign esophageal stricture(s) develop.

Prevention

- Use doxycycline liquid versus tablets when possible.
 - Advise clients to administer oral medication with food or follow medication with a water bolus.
- Consider acid suppression (ideally PPI) with frequent or persistent vomiting and prior to anesthesia for pets at high risk for GER.³
 - Avoid prolonged fasting (>18 hours) before anesthesia.⁴

See **Aids & Resources**, back page, for references & suggested reading.

In general, esophagitis can be treated on an outpatient basis, although surgical intervention is occasionally required.

GER = gastroesophageal reflux, H₂RA = H₂-receptor antagonist, PPI = proton pump inhibitor