

# Regurgitation

(Passive Return of Undigested Stomach or Esophagus Contents Back up to the Mouth)

## Basics

### OVERVIEW

- Passive, backward movement or return of food or other contents from the esophagus (part of the digestive tract, the tube running from the throat to the stomach); may be reflux into the esophagus, the contents of which is then regurgitated from there
- Contents end up in the throat (known as the “pharynx”) or mouth
- Reflux refers to movement back up of undigested food and stomach digestive juices from stomach into the esophagus
- Loss of normal motility of the esophagus leads to regurgitation

### GENETICS

- Regurgitation due to an enlarged esophagus (known as “megaesophagus”) can be inherited in wire fox terriers (autosomal recessive) and miniature schnauzers (autosomal dominant or 60% penetrance autosomal recessive)

### SIGNALMENT/DESCRIPTION OF PET

#### Species

- Dogs—more common than in cats
- Cats

#### Breed Predispositions

- Dogs—wirehaired fox terriers, miniature schnauzers
- Other susceptible breeds include Great Danes, German shepherd dogs, Irish setters, Labrador retrievers
- Boxers and Newfoundlands have genetic predisposition for inflammatory myopathy that is associated with changes in motility of the esophagus
- Breeds with short faces (brachycephalics) such as pug, Boston terrier, English and French bulldogs have a predisposition to sliding hiatal hernias, associated with stomach reflux up to the esophagus
- Cats—Siamese and Siamese-related

#### Mean Age and Range

- Congenital (present at birth) cases are identified soon after birth, or at weaning from liquid diet to solid foods
- Acquired (present later in life/after birth) cases may be seen at any age, depending on the cause

#### Predominant Sex

- No sex has been identified as being more likely to regurgitate

### SIGNS/OBSERVED CHANGES IN THE PET



- Owners often report “vomiting”; veterinarian will want to differentiate vomiting (forceful ejection of stomach contents up through the esophagus and mouth) from regurgitation (passive, backward movement or return of food or other contents from the esophagus into the throat or mouth); sharing video with the veterinarian may assist
- Regurgitation—passive process; little to no abdominal effort; no anticipatory drooling and retching; regurgitated material has increased amounts of thick mucus in it
- Vomiting—active process; forceful ejection of stomach contents up through the esophagus and mouth; vomited material may have increased amounts of bile staining (yellowish staining) in it; before vomiting the animal may be anxious, circle, drool and lip lick
- The shape of the expelled material (such as “tube-like”), presence of undigested food, and length of time from ingestion to regurgitation or vomiting are less helpful to differentiate between regurgitation and vomiting
- The caregiver may report a number of signs including apparent “vomiting”, difficulty swallowing (known as “dysphagia”), coughing, ravenous appetite, drooling (known as “ptyalism”), weight loss; may be extreme weight loss with muscle wasting (known as “cachexia”)
- Other signs, depending upon underlying cause
- Swelling may be noted in the neck
- Bad breath (known as “halitosis”)
- Increased breathing noises
- Discharge from the nose or fever, if pet also has pneumonia
- Weakness

## CAUSES

### **Congenital Pharyngeal Problems (Problems Involving the Throat, Present at Birth)**

- Cleft or short palate
- Cricopharyngeal achalasia (neuromuscular disorder of young dogs in which the function of the muscles in the throat and upper esophagus is abnormal, leading to swallowing difficulties and nose reflux)
- Myasthenia gravis (a disorder of neuromuscular transmission characterized by muscular weakness and excessive fatigue)

### **Congenital Esophageal Problems (Problems Involving the Esophagus, Present at Birth)**

- Persistent right aortic arch (abnormal development of major arteries of the heart, resulting in the esophagus being trapped by the blood vessels in the chest, causing obstruction)
- Enlarged esophagus (megaesophagus)
- Glycogen-storage diseases (inherited diseases in which normal glycogen [the body's carbohydrate reserve] metabolism is altered)
- Esophageal diverticulum (a pouch or sac, opening from the esophagus)
- Abnormal opening between a bronchus (airway) and the esophagus (known as “bronchoesophageal fistula”)

### **Acquired Pharyngeal Problems (Problems involving the Throat, Develop Later in Life)**

- Foreign bodies
- Cancer
- Rabies
- Poisoning or toxicity (botulism)
- Muscle disease (known as “myopathy”) and/or nervous system disease (known as “neuropathy”)

### **Acquired Esophageal Problems (Problems Involving the Esophagus, Develop Later in Life)**

- Enlarged esophagus (megaesophagus)
- Myasthenia gravis (a disorder of neuromuscular transmission characterized by muscular weakness and excessive fatigue)
- Abnormal narrowing of the esophagus (known as a “stricture”)
- Tumor or cancer
- Inadequate levels of steroids are produced by the adrenal gland (known as “hypoadrenocorticism” or “Addison's disease”)

- Low levels of thyroid hormone (known as “hypothyroidism”)
- Hiatal hernia
- Folding of part of the stomach into the esophagus (the tube running from the throat to the stomach; condition known as “gastroesophageal intussusception”)
- Backward or reverse flow of stomach contents into the esophagus (known as “gastroesophageal reflux”)
- Masses around the esophagus
- Dysfunction of the autonomic nervous system (known as “dysautonomia”)
- Muscle disease (myopathy) and/or nervous system disease (neuropathy)
- Foreign bodies
- Disease characterized by the formation of nodules (known as “granulomatous disease”) involving the esophagus
- Poisoning or toxicity (lead)
- Unknown cause (known as “idiopathic” disease)
- Stomach dilates with gas and/or fluid (known as “gastric dilatation”), and subsequently rotates around its short axis (known as “volvulus”)—condition known as “gastric dilatation-volvulus” or “bloat”
- Parasitic infection—*Spirocerca lupi*; *Spirocerca lupi* is a parasitic worm that lives in nodules in the esophagus; the nodules are known as “granulomas”
- Abnormal opening between a bronchus (airway) and the esophagus (known as “bronchoesophageal fistula”)

## RISK FACTORS

- Possible risk of backward or reverse flow of stomach contents into the esophagus (gastroesophageal reflux) with general anesthesia; the resultant inflammation of the esophagus (known as “esophagitis”) may lead to stricture formation and regurgitation (return of food or other contents from the esophagus or stomach back up through the mouth)

## Treatment

### HEALTH CARE

- Therapy for underlying cause should be instituted
- Most important are meeting nutritional requirements and preventing or treating aspiration pneumonia (inflammation of the lungs, caused by accidentally inhaling food, vomit, or liquids)
- Aspiration pneumonia may require supplemental oxygen therapy; administration of medication in a fine spray (known as “nebulization”) and efforts to dislodge secretions in the lungs and to induce coughing (known as “coupage”); and fluid therapy with balanced electrolyte solution
- These pets may be recumbent (unable to rise) and require soft bedding and should be maintained up on their chests (in sternal recumbency) or turned to alternate down side every 4 hours

### ACTIVITY

- Depending on cause, restricted activity usually is not necessary

### DIET

- Experiment with different food consistencies—liquid gruel, small meatballs, or food slurries made by using a kitchen blender
- Some cases benefit from tube feeding, although regurgitation may still occur
- Food and water should be elevated, and the pet should be maintained in an upright position 10–15 minutes after eating or drinking
- The caloric needs of the pet should be calculated and the diet should be monitored to ensure that the pet is getting adequate calories; your pet's veterinarian can provide information on the amount of food to feed

### SURGERY

- Surgical intervention is indicated for treatment of abnormal development of major arteries of the heart, resulting in the esophagus being trapped by the blood vessels causing obstruction ( “vascular ring anomaly”); neuromuscular disorder of young dogs in which the function of the muscles in the throat and upper esophagus is

abnormal, leading to swallowing difficulties (cricopharyngeal achalasia)—surgical treatment is a “cricopharyngeal myotomy”; abnormal opening between a bronchus (airway) and the esophagus (bronchoesophageal fistula)—dysfunction of the esophagus is permanent in most pets with these disorders, even after surgery

- Balloon dilation (procedure in which an instrument with an expandable balloon is inserted into the esophagus and the balloon is expanded to open the narrowing or stricture) is indicated for cases of esophageal stricture

## Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

- Antibiotics for aspiration pneumonia (broad spectrum or based on bacterial culture and sensitivity from transtracheal wash [TTW] or bronchoalveolar lavage [BAL]; TTW and BAL are techniques in which samples from within the respiratory tract are collected for evaluation by microscope and/or bacterial culture and sensitivity testing)
- Specific therapy for underlying cause, if indicated
- Drugs that improve the propulsion of contents through the stomach and intestines (known as “gastrointestinal prokinetic agents”)—metoclopramide may increase tone of the muscle between the stomach and esophagus (gastroesophageal sphincter), increases stomach motility, and may increase movement of the esophagus; cisapride is more effective for preventing backward or reverse flow of stomach contents into the esophagus (known as “gastroesophageal reflux”) than metoclopramide; enhances stomach emptying and helps to firm up the tone of the sphincter between esophagus and stomach, and may be more helpful in cats due to increased smooth muscle in the lower esophagus
- H<sub>2</sub>-blockers for acidity and inflammation of the esophagus (known as “esophagitis”)—ranitidine, famotidine
- Proton pump inhibitors may be used—such as omeprazole

## Follow-Up Care

### PATIENT MONITORING

- Pets with aspiration pneumonia (inflammation of the lungs, caused by accidentally inhaling food, vomit, or liquids) should have chest x-rays (radiographs) and complete blood counts (CBCs) checked until resolution, or if recurrence is suspected
- Pets should be monitored, weighed, and body condition scores (BCS; “body condition score” is an estimate of weight status [under or overweight] as compared to normal weight) determined to ensure adequate caloric intake; your pet's veterinarian can provide information on determining BCS

### POSSIBLE COMPLICATIONS

- Aspiration pneumonia (inflammation of the lungs, caused by accidentally inhaling food, vomit, or liquids)
- Others depending on presence of other diseases (such as inadequate production of thyroid hormone [known as “hypothyroidism”])

### EXPECTED COURSE AND PROGNOSIS

- An older pet with enlarged esophagus of unknown cause (known as “idiopathic megaesophagus”) has a poor prognosis
- Aspiration pneumonia is a typical cause of death or euthanasia

## Key Points

- Regurgitation is the passive, backward movement or return of food or other contents from the esophagus (part of the digestive tract, the tube running from the throat to the stomach) into the throat (pharynx) or mouth or backwards transfer of refluxed stomach contents
- If regurgitation is due to an enlarged esophagus (megaesophagus), most affected pets require lifelong therapy, even if an underlying cause is found

- Client dedication is important for long-term management
- Most pets will eventually succumb to aspiration pneumonia or regurgitation that does not respond to treatment; ability to control the condition depends on the underlying cause

*Blackwell's Five-Minute Veterinary Consult: Canine and Feline, Sixth Edition*, Larry P. Tilley and Francis W.K. Smith, Jr. © 2015 John Wiley & Sons, Inc.