Improve
Veterinary Education

Causes of Regurgitation in Dogs and Cats: Diagnostic Approach and Clinical Management

Introduction

This lecture explores the causes of regurgitation in dogs and cats, with emphasis on accurate definition, differentiation from vomiting, age-related differentials, and structured diagnostic reasoning. Regurgitation is a common but often misunderstood clinical sign, and correct interpretation is essential because it almost invariably indicates underlying esophageal disease. A systematic approach enables early diagnosis, appropriate intervention, and improved patient outcomes.

Definition of Regurgitation and Differentiation from Vomiting

Regurgitation is defined as the passive expulsion of esophageal contents. It occurs without nausea, retching, or abdominal effort. In contrast, vomiting is an active process involving abdominal contractions and prodromal signs such as hypersalivation and nausea. The distinction between regurgitation and vomiting is critical, as regurgitation specifically implicates esophageal pathology, whereas vomiting reflects gastric or intestinal disease. Failure to differentiate the two may lead to inappropriate diagnostic pathways.

Major Causes of Regurgitation in Young Animals

In juvenile patients, the most common causes of regurgitation include persistent right aortic arch, congenital megaesophagus, esophageal foreign bodies, and esophageal strictures. While foreign bodies and strictures can occur at any age, they are particularly prevalent in young animals due to indiscriminate eating behaviour and post-anaesthetic complications.

Persistent Right Aortic Arch

Persistent right aortic arch is the most common vascular ring anomaly. During embryonic development, the right fourth aortic arch remains functional instead of regressing, resulting in abnormal encirclement and constriction of the esophagus at the level of the heart base. The ligamentum arteriosum completes the vascular ring, causing esophageal compression and proximal dilation.

Clinically, affected animals often grow normally until weaning, when they transition from milk to solid food. At this stage, regurgitation develops, accompanied by failure to thrive. Aspiration pneumonia is a frequent and serious complication. Thoracic radiographs are the initial diagnostic test, although plain films may appear normal in some cases. Contrast oesophagrams reveal focal esophageal narrowing with cranial dilation. Computed tomography or fluoroscopy may be required for surgical planning. Treatment consists of surgical ligation of the ligamentum arteriosum. Prognosis is generally good when diagnosed early, although residual esophageal dysmotility may persist.

Congenital Megaesophagus

Congenital megaesophagus is a developmental disorder characterised by diffuse esophageal dilation and impaired motility. Clinical signs typically appear at weaning and include regurgitation, poor growth, and recurrent aspiration pneumonia. Breeds reported to be predisposed include German Shepherds, Irish Setters, Great Danes, and Fox Terriers, although the condition can occur in any breed.

Aspiration pneumonia is the leading cause of morbidity and mortality. Many affected animals are euthanised due to recurrent respiratory complications. Management focuses on nutritional strategies, including elevated feeding and dietary modification, rather than curative treatment.

Acquired Megaesophagus

Acquired megaesophagus is the most common cause of regurgitation in adult animals. It may be idiopathic or secondary to other diseases. Idiopathic acquired megaesophagus typically affects adult dogs with no identifiable underlying cause. Secondary megaesophagus is associated with conditions such as myasthenia gravis, thymoma, other paraneoplastic syndromes, lead toxicity, severe oesophagitis, neuropathies, myopathies, and endocrine disease, including hypoadrenocorticism and hypothyroidism.

Myasthenia gravis is particularly important, as 25–40% of affected animals develop megaesophagus, and a significant proportion present with isolated esophageal signs. Diagnostic work-up should therefore include acetylcholine receptor antibody testing in all cases.

Diagnostic Work-Up for Megaesophagus

A comprehensive diagnostic evaluation is required to differentiate congenital, idiopathic, and secondary causes. Baseline testing includes complete blood count, serum biochemistry, and urinalysis. Basal cortisol concentration is an effective screening test for hypoadrenocorticism; values above 2 µg/dL effectively exclude Addison's disease. Total thyroxine (T4) is used as a screening tool for hypothyroidism, but euthyroid sick syndrome must be considered in systemically ill patients. When total T4 is low, confirmation with free T4 by equilibrium dialysis and thyroid-stimulating hormone measurement is recommended.

Thoracic radiography confirms esophageal dilation and identifies aspiration pneumonia. Fluoroscopy may demonstrate motility abnormalities. Endoscopy may be required in selected cases.

Management of Megaesophagus and Esophageal Achalasia

There is increasing recognition of an association between idiopathic megaesophagus and esophageal achalasia, characterised by failure of the lower esophageal sphincter to relax. Sildenafil, administered at approximately 1 mg/kg twice daily, reduces lower esophageal sphincter tone and has been shown to significantly improve weight gain and clinical outcomes in affected dogs. Prokinetic agents such as cisapride and metoclopramide should be avoided, as they increase lower esophageal sphincter tone and may worsen clinical signs.

Nutritional management is essential. Feeding in an upright position using gravity-assisted techniques such as a Bailey chair is recommended. Some patients tolerate liquid diets better, while others do better with gruel or pâté consistency. Feeding strategies must be individualised. In severely affected animals, gastrostomy tubes may be required to ensure adequate caloric intake.

Esophageal Foreign Bodies

Esophageal foreign bodies are a common cause of acute regurgitation, particularly in dogs. Typical foreign bodies include bones, fish hooks, needles, sticks, rawhide, and skewers. Clinical presentation is often sudden, with signs of discomfort, gagging, and hypersalivation. Diagnosis is frequently straightforward based on history and radiography, although contrast studies may be required in some cases.

Endoscopy is the treatment of choice and is successful in most cases, either by removal or advancement of the foreign body into the stomach. Surgical intervention is rarely required. Delayed diagnosis or prolonged foreign body presence increases the risk of esophageal perforation, pneumothorax, and mediastinitis. Esophageal strictures are a common sequela.

Esophageal Strictures

Esophageal strictures are focal narrowing of the esophageal lumen, most commonly resulting from gastro-esophageal reflux during anaesthesia, chemical injury, medication-induced oesophagitis (notably doxycycline and clindamycin in cats), or less commonly foreign body injury. Clinical signs usually develop days to weeks after the inciting event and include progressive regurgitation and dysphagia.

Diagnosis is achieved via contrast radiography or endoscopy. Endoscopic balloon dilation is the treatment of choice and often requires multiple sessions. In refractory cases, indwelling balloon catheters may be used to maintain luminal patency during healing.

Esophageal Diverticula

Esophageal diverticula are focal outpouchings of the esophageal wall and are relatively uncommon. They are associated with chronic regurgitation, failure to thrive, and weight loss. Diagnosis is typically achieved radiographically without the need for contrast. Treatment is surgical resection.

Hiatal Hernia

Hiatal hernia involves herniation of abdominal contents through the esophageal hiatus into the thorax. It is most commonly seen in brachycephalic breeds and may be congenital or acquired. Clinical signs are often intermittent and exacerbated by exercise. Diagnosis is achieved via radiography, contrast studies, fluoroscopy, or endoscopy.

Initial treatment is medical, including proton pump inhibitors, prokinetics to increase lower esophageal sphincter tone, and management of brachycephalic airway disease. Surgical repair is reserved for refractory cases.

Esophagitis

Oesophagitis results from gastro-esophageal reflux, caustic ingestion, anaesthesia, or medication injury. Clinical signs include anorexia, pain, hypersalivation, frequent swallowing, and sometimes regurgitation. Diagnosis is often presumptive based on history and radiographs, although endoscopy provides definitive confirmation.

Treatment includes proton pump inhibitors, mucosal protectants such as sucralfate, and prokinetics to reduce reflux. Severe cases may require temporary enteral feeding via gastrostomy tubes.

Neoplastic Causes of Regurgitation

Esophageal neoplasia is rare but may include sarcomas in dogs and squamous cell carcinoma in cats. More commonly, extraluminal masses such as thymomas may compress the esophagus and cause regurgitation as the sole clinical sign. Thoracic imaging is essential in these cases.

Conclusion

Regurgitation in dogs and cats is a cardinal sign of esophageal disease. Accurate differentiation from vomiting, age-based differential diagnosis, and structured investigation are essential for successful management. Understanding the wide range of congenital, acquired, mechanical, inflammatory, and neoplastic causes enables clinicians to diagnose accurately, treat effectively, and improve patient prognosis.