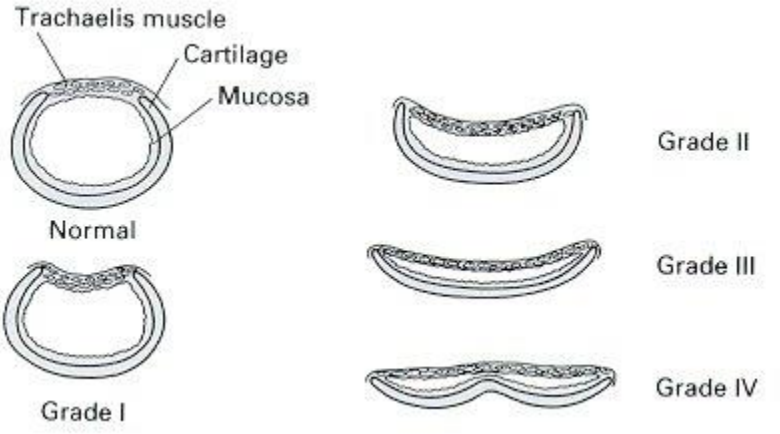
Coughing Dogs and Dynamic Airway Disease

The trachea or windpipe is a flexible tube similar to the tube of a vacuum cleaner that leads from the mouth to the lungs. It has multiple cartilage rings that help to maintain the shape of the airway when a dog moves about, breaths or coughs. The opening of the C points upwards and a muscle forms the roof of the trachea. In some dogs the cartilage rings begin to soften and as the muscle stretches the cartilage rings collapse. This collapse can be localized to a part of the trachea or extend all the way into the smaller branches of the airway. As the diameter of the trachea reduces, the ability to breath inhale oxygen reduces.

In the picture below, we see a normal trachea with a big open tube for breathing and a taut muscle roof. As the grade of the collapse increases, the diameter of the tube for breathing reduces.



Small breed dogs are most commonly affected with the disease, particularly Yorkshire terriers, Pomeranians, Poodles and Chihuahuas. Affected dogs are often middle aged or older, though it can be seen in some young dogs as well. Dogs that are overweight or that live in a household with smokers may be more at risk or at least more likely to show clinical signs.

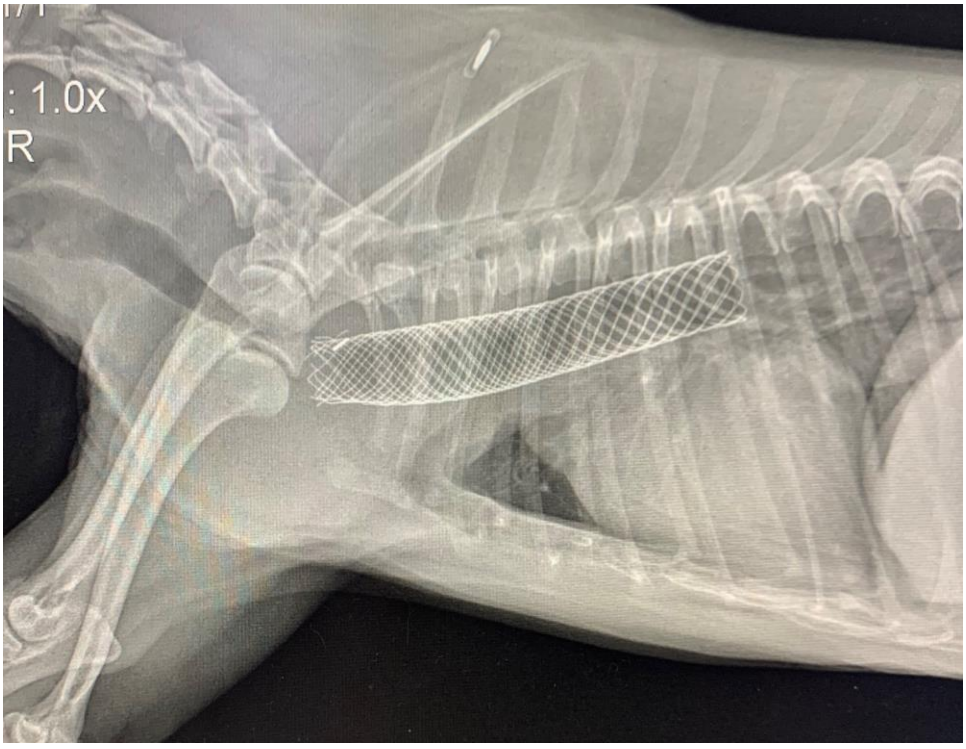
The clinical signs include

- harsh dry cough that sounds like a goose honking
- coughing when picked up or if someone pulls on their collar
- difficulty breathing
- exercise intolerance
- coughing or turning blue when excited or restrained
- fainting
- wheezy noise when they breathe inward
- may gag after drinking water and wretch up puddles of water

The disease is called Dynamic Airway Disease because the clinical signs are dynamic and can change with the phase of respiration. As the pressure changes in the chest as we breath in and out, so does the degree of collapse. It can be diagnosed with chest radiographs(xrays) , fluoroscopy (moving xrays) or endoscopically (flexible camera into the airway). It is also important to ensure that other underlying disease conditions are not present that may present with similar symptoms eg heart disease, some hormonal imbalances, lung cancer or airway polyps to name a few.

Treatment and management of the dynamic airway can be achieved:

- Medically: medications that help to reduce airway muscle spasm can help in early cases. Reduction in inflammation and spasming of the airway lining can be achieved with puffers (like for human asthmatics). Nebulisation can also be a helpful adjunctive therapy. Cough suppressants are sometimes needed.
- Surgical: specialist surgeons are now able to use a synthetic stent to act as supporting scaffolding within the trachea. In the picture below the “garden hose” is the synthetic stent inserted to hold up the walls of the airway and enable normal breathing.



If your pet coughs, there are a multitude of reasons – some simply corrected and others that require more intervention and diagnosis. Early diagnosis is beneficial and early treatment has far better outcomes. Please come in and see us if your pet is coughing. It is also beneficial to know:

- When the cough occurs, eg after exercise, drinking, pulling on the lead, after sleeping?
- What is the exercise tolerance like and has it changed eg tiring more easily vs still super energetic?
- How fast is the breathing when sleeping? The sleeping respiratory rate is not affected by stress, heat or exercise and it is a true representation of how efficiently oxygen is being exchanged as we breath.
- What is the nature of the cough? Is it dry and wheezy, goose honk, moist and productive?
- Is your pet otherwise well? Is appetite, water intake, stools, urination patterns as before or have they changed?

If in doubt, please schedule a check up and put your mind at rest or at least set a plan of action in place.